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Original

THE SURGICAL RELIEF OF OBSTRUCTION OF THE COMMON DUCT BY BILIARY CALCULI.

BY HENRY O. MARCY, M. D., BOSTON.

In 1876 it was my fortune to care for one of the most intelligent of physicians who was suffering with an intermittent form of biliary obstruction, resulting, as he believed, from a calculus. He often discussed the feasibility of surgical relief and emphasis was made upon the belief that measures should be devised by which the foreign body could be safely removed. In fulfillment of a promise made him I examined the body after death and have now in my possession the obstructing calculus.

The clinical history of this patient is of practical interest. The suffering was intermittent; at times there was a marked icturus, followed by periods of comparative relief. He occasionally had bloody vomiting and much of his suffering was referable to the digestive tract. The immediate cause of death was hemorrhage from the stomach, and there were a number of infractions in the mucus membrane of this organ, as also a marked stenosis of the duodenum caused by the cicatrical contractions.

It was believed that these pathological conditions were dependent upon secondary changes incident to icteric poisoning, since only at times of biliary obstruction did he have marked attacks of continued nausea and vomiting. A few years later another intimate friend suffered at times severely from biliary obstruction and often declared that she could determine with something of precision the location of the something that caused the attacks and determine with considerable accuracy the dislodgment of this something followed by speedy relief. These attacks became more frequent and severe, when the subject of surgical interference was discussed with Dr. C. Ellis, of Boston, one of the wisest of clinical teachers. The gall-bladder was not especially enlarged and the obstruction was believed to be in the common duct, almost with-

out question a calculus, but operation was decided against, since surgical exploration of the common duct was believed impossible.

Later the autopsy showed that the diagnosis was correct, and a careful anatomical study of the conditions found taught me to believe a surgical operation might have been performed, the offending calculus removed and the parts closed with a reasonable expectation of recovery.

Here, as in the first case, the icteric conditions had been intermittent for a period of some years, and when relief was obtained the patient would remain for several months in a condition of health, nutrition good and general vigor not impaired. Post-mortem conditions were instructive in that the gall-bladder was small, contracted, the heptic structures not particularly changed; the obstruction was caused by a gall-stone, measuring one-third of an inch in diameter, lying in the common duct. The stone was movable, the mucosa of the duct was eroded with slightly-bleeding walls apparently caused by recent pressure.

There had evidently been considerable play of movement in the dilated duct, perhaps explaining in a measure the intermittent symptoms of biliary obstruction. The fatal attack lasted but a few weeks, and as in the first case the nausea and vomiting were persistent, and toward the end a very considerable quantity of fresh blood in the vomitus was believed to have hastened the fatal issue. Toward the pyloric orifice the mucous membrane was broken, with several small bleeding vessels.

Within a few months a second case came under observation, a woman in middle life, previously in excellent health, was suddenly seized with seeming complete biliary obstruction, with forecastings of a probable fatal issue. Repeated consultations were held, in which surgical interference was discussed with her former physician, Dr. Z. Adams, of Framingham, and the late Drs. Ellis and Bowditch, of Boston. The probable diagnosis was accepted of biliary obstruction of the common duct by a calculus with the possibility of malignant disease. I advised an exploratory incision, which was warmly supported by Dr. Bowditch, but was as strenuously objected to by Drs. Adams and Ellis. The decision was rendered adversely by the friends, who intelligently inquired as to the history of such operations, especially when I informed them that to the best of my knowledge surgical relief for biliary obstruction in the common duct had never been attempted by surgeons. The autopsy about two weeks later showed a gall-stone impacted in the common duct, with a disorganized liver as the cause of death. A careful study of the conditions confirmed my conclusions arrived at in the former case that it would have been practicable to have removed the calculus with a fair prospect of subsequent recovery. I then determined that such experience should find fruitage in definite action. In 1887 Dr. W., of Vermont, aged 72, a physicial of exceptional intelligence, had suffered for a number of years with more or less severe attacks of biliary colic, which he thought were due to the obstruction of the common duct by a gall-stone. Through his thin, relaxed abdominal wall he believed at times he could differentiate a foreign body, which was movable and which often acted as a valvular wedge, causing obstruction of the common duct. When these attacks came on the gall-bladder would become dilated as a small, tense, painful tumor, followed by jaundice, which after a time would subside with a retrocession of the obstructing mass and a relief in his biliary suffering. The last attack continued much longer than usual, and the doctor himself believed it would result in a fatal issue unless in some way speedy relief could be given. As a consequence I was summoned. The patient had been unable to sit up for some days, vomiting more or less constant. emaciation extreme, the patient evidently in immediate danger. There was much pain and tenderness at the base of the liver, and just to the right of the median line there could be felt a

small, ill-defined mass which the doctor emphasized as the location of his obstruction.

An incision was made parallel to the lower rib, the base of the liver was easily found, and a rather small, undistended gall-bladder was exposed which was intimately bound to the transverse colon by old, firm, vascular adhesions. The incision was extended toward the median line, but the adhesions were everywhere encountered, and a further dissection was reluctantly abandoned. A small calculus could be felt in the common duct which I dislodged with the finger and pushed upward into the gall-bladder. It could have been removed through an incision made into the duct and the wound closed, but it had not then occurred to me to do this by means of buried sutures, and the adhesions of the gall-bladder to the parts about rendered it impossible to attach an opening made in it to the parietal peritoneum for drainage. I therefore reluctantly abandoned further effort for its removal, and closed the wound without drainage. Immediate recovery followed, with primary union, with marked relief to his obstructive symptoms. However, after a period of relief these returned with all their former severity, soon followed by death.

A careful autopsy was made by Professor Frost, of Hanover, who reported that a calculus about the size of a walnut was in the greatly dilated common duct, producing complete occlusion. Although the hepatic structure was not materially changed, yet the old adhesions binding the gall bladder to the transverse colon were so extensive that the post mortem dissection was made with difficulty, and on this account further operative measures would have been, in his judgment, unjustifiable.

Case V.—Mrs. L., aged 40, has had several attacks of biliary colic of a serious character accompanied with jaundice. The last attack preceding the operation occurred in August, 1889. Life at that time thought to have been imperiled, and she has not been quite well since. Entered my private hospital. Has severe local pains, some vomiting, markedly jaundiced, dark wine-clay colored stools, thick abdominal wall, beneath which a considerable sized fluctuating tumor is well defined, the base of which is quite on the line with the umbilicus. Operation October 26, 1889, assisted by Drs. Clark and Nelson. Immediately upon my dividing the peritoneum the cystic growth distended the lips of the wound. Attached it to the peritoneum by a double row of tendon sutures and incised. Ten ounces of thin, light-colored bile escaped, floating out with it a gall stone the size of a large almond. Since it was apparent that biliary obstruction could not result from a large stone floating in a dilated gall bladder further operative measures were necessitated. Careful probing revealed the presence of another calculus situated deeply toward the median line, quite beyond the cystic duct. A free flow of bile continued through the opening in the gall bladder, showing that the hepatic duct was not occluded. All effort at dislodgment failed, and as much force as was deemed justifiable was used in the attempt to crush it by pressure upon the walls of the duct, but without avail. With long, slender forceps I could obtain an imperfect hold upon the calculus, and with the blunt uterine curette partially rotate it.

The bladder was washed out with a sublimate solution, the stitches cut away, the wound packed with a sponge after having somewhat forcibly drawn the gall bladder through it. Even this procedure did not enable us to seize and remove the calculus. I then divided the walls of the common duct with scissors and everted the edges from over the roughened calculus, which was even then removed with difficulty. Further probing not only demonstrated that there were no more calculi, but after delicate manipulation the probe passed easily some inches beyond into the intestines.

It now was a question of importance how to close this long, deep opening. The abdominal cavity had been shut off by sponge packing and

fortunately kept entirely clean. The operative field was much more accessible than had been deemed possible. The incision in the abdominal wall had been extended nearly to the median line, about five inches in length, the dividing duct was quite the size of the little finger, its walls much thickened. With a fully curved needle and a carefully selected tendon suture I united the divided edges of the thickened mucous membrane of the duct and gall bladder by a continuous suture. This was followed by another layer of continuous tendon sutures carefully coaptating the peritoneal edges, while over all a third layer of tendon sutures was applied, the stitches taken parallel to the long axis of the wound through the peritoneum about three lines from the cut edges, each succeeding stitch entering exactly opposite to the emergence of the preceding one. Tension upon this suture not alone buried it, but intrafolded the uninjured peritoneum with exact coaptation. The wound through the duct and gall bladder thus closed measured four inches. The sponge packing was now removed; the contiguous deeper structures were uninjured. The peritoneum was closed with a double tendon suture and the sundered muscular structures similarly in separate layers. The skin was also coaptated by a layer of buried tendon sutures, and the wound sealed with iodoform collodion. Of course this method of closure does not permit of drainage. It is the method, however, which I have advocated and practiced for the closure of all aseptic abdominal wounds for many years.

Rapid convalescence ensued without incident. This rough mulberry-looking calculus, grape size, was the offending member, weighing, when dried, 59 grains.

These preceding histories were much more briefly reported and published in a contribution entitled "Surgical Relief of Biliary Obstruction," read before the Surgical Section of the American Medical Association, at Nashville, in 1890. I have reported these cases with greater accuracy of detail since Dr. Christian Finger in his valuable contribution entitled "Stones in the Common Duct and Their Surgical Treatment," published in the American Journal of Medical Sciences, in 1896, states that "Courvoisier was the first to perform choledocholithiotomy." He had made the diagnosis of choledochus stone and had planned the operation. His first operation was performed January 22, 1890.

Since the date of my publication, in 1890, I have operated a number of times, and give my fullest approval to the advisability of surgical relief for biliary obstruction of the common duct in properly selected cases.

HYDROZONE FOR DISORDERS OF THE GENITO-URINARY TRACT.

BY JOHN AULDE, M. D., PHILADELPHIA, PA.

Within the past ten years marked changes have taken place in both medical and surgical treatment of genito-urinary affections. The influences relating to the rapid multiplication of micro-organisms are now fully recognized and the aim of the practitioner is directed to their destruction. No remedy has been found more successful in this class of cases than the local employment of nascent oxygen, which is but an allotropic form of ozone. We are indebted for this discovery to the investigations of Dr. Benjamin Ward Richardson, of London, who elaborated the principles nearly forty years ago. For the most part, surgeons and medical practitioners have employed the medicinal peroxide of hydrogen, but later investigations have added material resources to our armamentarium, one of which is hydrozone, which contains at least double the amount in volume of oxygen hitherto accepted as the standard for medicinal peroxide of hydrogen.

About eight years ago I was very forcibly impressed with the clinical properties of hydrogen dioxide through its prompt action in a case of protracted gonorrhea. The patient had suffered for about three months, and notwithstanding the most earnest solicitations of several attendants the discharge had persisted. In addition to this, there was an orchitis present, the left testicle being about the size of a baseball. Treatment consisted of the local use of injections of equal parts of hydrogen dioxide and moderately warm water, used at intervals of four hours, these injections being followed by a solution of arsenite of copper containing one milligram (one 65th grain) to the drachm, diluted with an equal quantity of hot water. The object of these injections was twofold: First, to cleanse the urethra by the destruction of micro-organisms, and, second, to stimulate the functional activity of the epithelial cells, thus enabling them to resist the absorption of poisonous products. For the relief of the orchitis a suitable suspensory bandage was supplied, together with the local application of a stimulating ointment composed of mercury biniodide and lard, one part to ten. The ointment was applied at intervals of twenty-four hours for two or three times, when the swelling had perceptibly diminished and convalescence had begun.

In the course of a week this patient, who lived in a distant State, had so far recovered that he was able to return to his home, although he remained under treatment for a period of ten days, during which time

the ointment was reapplied once. The discharge from the urethra had entirely ceased, pain had subsided and chordee had disappeared.

The same method of treatment is equally effacious in the treatment of non-specific urethritis and ordinary forms of gleet, but as hydrozone is so much more concentrated and perfectly harmless, it should be given the preference over medicinal hydrogen dioxide. This will be understood when the advantages of using hot solutions are taken into consideration. Hot solutions of either hydrogen dioxide or hydrozone quickly liberate the nascent oxygen and thus diminish the activity of our medication.

The value of this product is to be commended in the treatment of vaginitis and vaginismus, where hot solutions are especially indicated. Heretofore it has been the practice of physicians to recommend the employment of a hot vaginal douche, with or without some alkaline substance, such as sodium bicarbonate or boric acid, to be followed by a small quantity of medicinal peroxide of hydrogen combined with either warm or cold water; but with the increased volume of nascent oxygen contained in hydrozone a single application of the hot solution, one part to eight, will be found quite as effective. The patient should be taught how to employ the douche in order to obtain the best results. She should have a fountain syringe, in which the medicated solution is placed; it is then hung upon the wall at a distance of six feet from the floor and the patient sits upon a suitable vessel. The rubber tip of the hose is then introduced well back into the vaginal cavity, so as to avoid introducing the solution into the uterine cavity, and with the fingers of the disengaged hand the patient compresses the labiae, allowing the medicated solution to distend the vaginal cavity, by which it is brought into contact with every portion of the diseased tissues. This plan should be repeated at least twice in twenty-four hours.

In the treatment of uterine disorders, where it is necessary to bring the medicated solution into contact with the lining membrane of the uterus, the patient should be placed in the recumbent position, with the hips well elevated, as in the case of other uterine applications. An ordinary dilator is then employed to distend the cervix, so as to permit the introduction of the nozzle of the syringe. The distention should be sufficient to permit the exit of the injected solution, or a suitable return-flow tube can be used instead. Certain precautions are necessary in making these applications, especially in chronic cases, because the effervescence attending the destruction of unhealthy mucus in the uterine cavity may be sufficient to drive a small portion of the debris into the Fallopian tubes. This danger, however, can be reduced to a minimum by the liberal use of the hot medicated solution and afterwards instructing the patient to sit up in bed. The pressure thus brought upon the uterus is sufficient to cause the discharge of all debris resulting from this application.

In this class of cases it is of the utmost importance that none of the vaginal secretions should be permitted to enter the uterine cavity, which can be avoided by having the patient take a preliminary vaginal douche, using the medicated solution. Where this cannot be accomplished, or seems unnecessary, the vaginal tract should be cleansed by the local use of the medicated solution after introducing the speculum.

A word of caution should be added in regard to the vaginal douche. Where the cervix is patulous and the patient takes the vaginal douche in the recumbent posture, using the precaution above described to insure the full distention of the vaginal cavity, a portion of the debris would almost certainly find its way into the cavity of the uterus, and with it probably more or less of the poison, and thus we have uterine disease superadded to the vaginal affection. Undoubtedly many cases of uterine disease have resulted from a failure to observe this precaution.

Diluted hydrozone will be found an efficient remedy for the relief of

cystitis, occurring either in the male or female. In chronic cases the amount of the solution (1 to 8) must be limited, owing to the thickening of the walls of the bladder and the pain resulting from the muscular contractions after the withdrawal of the solution. Gradually, however, the amount of solution can be increased. In addition to the local treatment of cystitis and gleet, and sometimes in chronic cases of gonorrhea, much benefit will be derived from the internal administration of calcium sulphide, about one-tenth grain, at intervals of two hours.

VASCULAR MOBILITY AND STASIS, INTERRUPTION, ARREST AND RESTORATION OF THE SANGUINOUS WAVE, PHYSIOLOGICAL AND PATHOLOGICAL.

BY THOMAS H. MANLEY, M. D., NEW YORK.

(Continued from November 7th Number.)

PROPHYLAXIS AND SECONDARY HEMORRHAGE.

It has been denied by some surgical authorities that there is such a thing as secondary hemorrhage. Indeed, not long since a speaker of some note raised the question in one of our societies whether there really was such a thing, or such a condition, strictly speaking, as secondary hemorrhage.

He took the ground that where there is a grave or mortal loss of blood after operation there had been faulty or imperfect primary hemostasis.

If this position could be supported it would impose a serious responsibility on the surgeon in every operation of any considerable magnitude that he might undertake, and would controvert one of our best established doctrines of pathology.

But unhappily clinical and experimental facts totally overthrow this view, and prove beyond question that by no means or provision known to surgical art can we always forestall a secondary leakage. Time and time again the cautious surgeon will search with vigilance for any bleeding point before he closes a breach in the parts or seals a cavity, and leave a dry, bloodless surface, to be hastily summoned to a patient approaching or in collapse from the opening of vessels which now give issue to blood, or which have displaced their ligatures. In abdominal surgery for non-inflammatory conditions secondary hemorrhage is the bete noir of the operator. In fact perfect hemostasis in the surgery of the female generative organs within the pelvis is scarcely compatible with the ultimate integrity of the urinary viscera after operation. This was well illustrated in the unrivaled operative successes of the late lamented Keith. His patients almost invariably survived operation because he securely clamped and charred with red irons the pedicular stumps, and let it be remembered that there is no hemostatic so effective as the potential cautery; but after operations so many of his patients dragged out such a miserable existence from the consecutive inflammations which matted everything together in such an inextricable mass—adhesions everywhere—that when Apostolli's new methods of treatment for tumors, he was among the first to lay the scalpel aside and eagerly seize on this much vaunted method of tumor treatment.

In Senn's late remarkable record in extirpating uterine fibroids we note that he had no mortality, but it will be observed that in no instance did he venture to leave the free stump in the peritoneal cavity. On the contrary, in every instance the pedicle was dragged up out of the abdomen and anchored in the wound, with its free, gaping vascular surface exposed.

This method is no doubt the safest and most secure, but as Dr. Kelly, of Baltimore, properly declares, it is not ideal surgery, inasmuch as the stalk of tough fibrous tissues, dragging the abdominal wall into the pelvis and itself a perpetual horizontal bar lying across the abdominal and pelvic cavities, must seriously and for all time interfere with the functions of the neighboring organs.

Last year during a series of experiments on the transparent blood vessels of the frog's webbing I was enabled to observe the effects of an anesthetic alone on vascular tension, and there witnessed enough to readily explain the great tendency to consecutive flooding after ether is withdrawn.

The danger, however, is always present in any serious operation, whether an anesthetic be employed or not.

As the hour approaches for an operation, many are seized by the most distressing apprehensions and fright, become pale and tremble, and, though they possess an individuality of great fortitude, the moment the cold steel is sunk into the tissues their courage and strength collapse and a dangerous syncope may set in. During this stage an operation may be practically bloodless, or nothing will bleed but the larger arteries. More or less of this state of great depression obtains in every capital operation under ether. Shock there will be and must be in all mutilating operations on the human body.

Recovery from it may never follow in some, while in others, rapidly.

And now, that vascular tone once more asserts itself, beware of hemorrhage; be vigilant and scrutinize the state of the dressings, and the condition of the patient.

The first element in effective prophylaxis is vigilance. The next is cool deliberation and courage. Now, anatomical knowledge, experience and skill come in. No time is to be lost. The self-assurance and confidence of the operator will inspire courage in the patient.

But relief must be prompt, direct and effective. In an emergency of this kind, except as an extreme and last resort under extraordinary circumstances, it is not well to depend on any description of styptics or packing of the wound—the one only security depends on seeking out the bleeding vessel and ligating it.

It is of greatest importance in all these cases, after great loss of blood, not to fail to utilize the free intravenous or hypodermic injection of large quantities of artificial serum.

A common Davidson syringe with a perforated needle attachment will answer in any case as an injector, and it is only necessary that it be thoroughly aseptic and tight-jointed that no air can enter during its employment.

Without any injector at hand, then there can be no question, but free libations of water and alcohol are of infinite value either by the mouth or rectum, or both. The patient should be laid flat on the back and kept quiet, in a well-ventilated room.

INJURIES TO THE BACK, WITHOUT APPARENT MECHANICAL LESION, IN THEIR SURGICAL AND MEDICO-LEGAL ASPECTS.

"Est brevitate opus, ut currat Sententia."

BY EDWARD C. MANN, M. D., NEW YORK.

As a general rule in surgery the effects of all injuries are constitutional and local. In this paper we propose to treat of a class of injuries where the effects are, as a rule, remote rather than immediate, and which in many instances affect the mind quite as seriously as the body. The immediate constitutional state after an injury to the back may be one of prostration and shock to the nervous system, in which we find our patient perhaps partly unconscious, with a feeble pulse and imperfect respiration. There may be complete syncope, with the pulse and respiration not perceptible, or the nervous instead of the vascular system may be principally affected and the patient may be incoherent or perhaps comatose, nausea, vomiting, suppression of urine and convulsions, especially in children, may occur. The local effects in injuries of the back where they occur, but a class of injuries not included in the scope of my paper, include wounds, contusions or every kind, fractures and dislocations. Injuries to the backs of children may occur from blows or falls without any obvious lesion of a mechanical nature occuring, and after some time elapsing we shall see our little patient complaining of a good deal of pain, and upon examination we shall discover redness and swelling in the tissues, and with the history of a fall or blow in the back. I should at once in such a case diagnosticate the existence of caries. Finally, in these cases an abscess forms and after our incision to let out the pus we shall easily feel the carious bone with our probe. The abscess leaves fistulous openings, from which there is more or less sanious pus discharged, and the fistulous opening is surrounded by unhealthy granulations. These cases occur from injuries to the back much more frequently, I am satisfied, than is imagined by the profession, and I would urge upon them the necessity of impressing upon the mothers the necessity of not trusting their nurses so implicitly as they do, as the latter are habitually untruthful when questioned about falls. I have seen a nurse girl give a child a thump on the back well calculated to develop caries of the spine in that child if it happened to come of consumptive or scrofulous stock, and in my daily round of professional duties I stop very often to administer the sharpest rebuke of which I am capable relative to their care, or want of care, more properly speaking, of the children they are nursing. I cannot refrain right here from plainly speaking my mind, as I am accustomed to do very freely on the nurse question as it affects our children. Utterly unprincipled, often without a vestige of chastity, these women, I am satisfied, often are the cause of conveying, in one way or another, to their infant charges that most widespread national curse, syphilis. Why do not our American mothers guard their offspring more jealousy, and instead of giving their babes to a hired nurse, who comes out of an intelligence office, and whose home is in the slums of the city, where probably there are two or three syphilitic people in the house, look themselves for a different class of nurses? Among our society women the nurse perceives very soon that her duty

is to see that the child does not disturb or interfere with the mother's society duties(?). There are too many of these society mothers, who willfully neglect the most precious legacy that they can ever have—the guidance of an immortal soul—and to fulfill what they consider of more importance—the claims of a society that would very quickly ignore their very existence did their social position become lowered by the loss of money—they give up to ignorant and vicious servants the duties which, if properly performed, are the crowning glory of motherhood. I know whereof I speak, having put many a beautiful child on an anticyphilitic treatment, where by patient investigation, and I always probe these things to the bottom, I have traced the infection straight to the servant's home. Having thus unburdened my mind on this subject, I will get back on the path from which I fear I have strayed very far away. In a violent injury to the back of an adult the shock is the first thing that occurs, and our patient may die immediately, with no apparent mechanical lesion. If our patient survives the shock inflammation sets in and our patient may develop a meningitis. The symptoms of severe concussion are pallor of the face; the respiration gasping and afterward becoming pretty normal; pupils dilated; difficulty in swallowing; pulse feeble and perhaps slow, and the consciousness muddled. Our patient might appear to be feigning. We may possibly have unconsciousness. In these most severe cases the cord is contused, and if our patient dies and we make a post mortem we may find a little red point of extravasation. In these cases we should use for stimulants carb. of ammonia or alcohol moderately, with bags of hot sand to the body with friction. Hypodermics of 1-100 gr. of atropia are also indicated. We must avoid all excessive stimulation. When our patient recovers from the immediate shock he will have confusion of ideas. He may have nausea and vomiting, which are good signs, as when the injury is very severe our patient will not vomit and may not if it is very slight. If the brain is implicated, as it may be, and there is compression we shall find dilated pupils, a comatose condition, the respiration stertorous and the cheeks and the alae of the nose moving at each movement of respiration. The velum palate is paralyzed and there is rattling of mucus in the throat. The pulse is slow and laborious. If at the end of ten days, after a severe injury to the back, the patient has slight rigors and becomes partially or wholly unconscious we are to infer that inflammation has been set up and that supporation has taken place. These cases are almost always fatal. We may have a paraplegia. We may have epileptiform convulsions. The paralysis, if it occurs, is caused by hemorrhage of some of the vessels of the cord, coming on as reaction comes on, or in a few days or weeks as the result of contraction of lymph or pus. There may possibly be a fracture without apparent mechanical lesion, and in these cases we shall get either antero-posterior or lateral deformity of the injured part of the spine. If the injury occurs above the fourth cervical vertebra the pressure on the phrenic nerves will give rise to death from apnea. In these cases the respiration is stopped either at once or in a few days. If an injury occur to the back in the dorsal region and we find paralysis of the upper extremities and paralysis of the bowels we may diagnose a possible fracture, even if not apparent. If in an injury to the back in the lumbar region we get paralysis of all the parts below the seat of injury we may also diagnose a possible fracture, although not necessarily. We should never in suspected fractures of the spine endeavor to get crepitus. A fracture here will probably kill our patient, while patients not very unfrequently recover from fracture in the dorsal region. In a suspected fracture we should put the patient on his back and make extension and counter-extension, and union may take place. We should put our patient with any serious injury to the back on a water

bed, so as to get equable pressure, and use a catheter three or four times in the course of twenty-four hours. If there is a tendency to paralysis a pill of croton oil, strychnia and colocynit may be used. Injuries to the back may be complicated with fractures of the hip, where there may be fracture of the cervix within the capsule, an extra capsular fracture or fracture of the brim of the acetabulum or of the floor of the acetabulum. We may possibly get as a complication dislocation of the hip.

CONCUSSION OF THE SPINE.

There is no class of surgical injuries of more interest to the practical surgeon than those which come under this head. No injury to the spine, however slight, arising from shocks to the body generally, as in railway accidents, or from the ordinary accidents we meet with in general practice, comprising falls, blows, horse and carriage accidents, is too trivial to be overlooked, as the spinal cord may be functionally disturbed and even organically diseased from any and all such spinal shocks and injuries. We may have local and constitutional, immediate and remote effects from these injuries. The primary effects of a concussion of the spinal cord are due to molecular changes in the structure of the spinal cord, while the secondary effects are of an inflammatory character, consisting of a meningo-myelitis, disturbances of nutrition, with great mental and moral depression. There is often change of character, irritability of temper, and often impairment of some of the special senses. Death may occur after chronic inflammation of the membranes and cord, lasing for three or four years, during which time our patient's health has gradually been breaking down, with slow extension of paralytic symptoms. The symptoms may be immediate or they may develop slowly after an interval of some months. In a direct injury to the spine we may find our patient with a bruise on his back, with pain on pressure, with consciousness intact, with partial paraplegia, with more or less numbness. Febrile reaction sets in and lasts for a few days, during which time out patient may not be able to empty his bladder, necessitating the use of the catheter every eight hours. We may find a great latitude as to the extent, degree and relative amount of paralysis of motion and of sensation in any given case. If the direct blow is on the dorsal or lumbar vertebrae paraplegia usually results. Sensation is necessarily effected, spasm and rigidity of the muscles may occur, the sphincters may be involved and we shall have much pain. There may be incontinence of urine or there may be partial or complete retention. Low temperature is the rule in spinal injuries, a high temperature when we meet with it being indicative of inflammatory troubles. When we find a fatal result it is due to hemorrhage, laceration, extravasation or to inflammatory softening, and our patient's recovery may be complete or incomplete. A considerable length of time may elaspe between a spinal concussion or injury to the back and the development of the symptoms of the injury, which may be so slight perhaps as to attract little attention at the time. The muscular, tendonous and ligamentous structures of the spinal column may be very violently wrenched and sprained by injury or concussion without injury to the cord itself. These may recover in a few weeks, or in delicate persons they may lay the foundation for serious organic disease. If inflammation is developed in the fibrous structures it may extend to the meninges of the cord, and this possible danger should not be overlooked or ignored in our prognosis. Our patient may slowly develop cerebral symptoms from the extension upwards of meningeal irritation. After a spinal concussion it is not at all uncommon for our patient to undergo a gradual change, both mentally and physically, and he is never the same man again. He gradually becomes an invalid, unable to apply his mind to business or to stand the ordinary cares and worries of life, which pre-

vious to his injury had never troubled him. There is decided mental failure, which may proceed to complete imbecility or insanity. The mental responsibility of such a person is greatly lessened and his testamentary capacity may be also affected. I hold that when injury of the back is severe enough to produce at the time of the injury unconsciousness, insensibility, stupor or syncope that the severity of the concussion is such as to produce an immediate injury of the greatest nature to the central nervous system and that never afterward does such an individual have complete restoration to health. After a concussion of the spine many weeks or months may elapse before the more positive and distressing symptoms occur. In the interval, however, our patient suffers from poor health, his nervous power has gone and his face is anxious and careworn. His memory is defective, his thoughts are confused, the business apitude is lost, the temper is changed, the sleep is poor and the special senses are impaired. There is also loss of motor power and a diminution of sensation in the limbs. Our patient at first complained of weariness on slight exertion, either mental or physical, followed by the modifications in sensibility, pain and rigidity of the spine, cerebral disturbance, and, as I have remarked, loss of motor power. When there is myelitis the sensibility is at first augmented, and then as the myelitis becomes chronic the gait is very much affected. Whether acute or chronic, myelitis is much more apt to attack the lower portions of the cord than the upper, and when it attacks the upper portions of the cord and we get cerebral complications we may be sure we have more or less spinal meningitis. The coexistence of meningitis and myelitis is what we generally find in our patient who has suffered from severe injuries to the back. I think it is rare to find inflammations of the spinal membranes limited to the spinal cord, and think that there is an extension of the morbid process, which gives us as a result an increased vascularity and inflammation of the arachuoid. In spinal meningitis we have as the most marked symptom severe pain along the spine and down both legs. These attacks of pain may be separated by intervals of almost complete ease and comfort. The pain is soon accompanied by stiffness of the muscles of the back and legs. Any movement of the body, neck or legs gives rise to pain. There is absence of paralysis; some exaltation of sensibility; loss of power over the bladder and partial loss of power over the bowel. There is absence of spinal tenderness and there is also an absence of marked spasmodic symptoms. In proportion as the higher portions of the cord are affected there is difficulty of mastication and deglutition. Difficulty of breathing generally is present. There is little sympathetic fever, and there may or may not be cerebral symptoms. There is no increased reflex excitability.

Myelitis is characterized by paraplegic anesthesia ushered in by tingling in the parts, which presently become anesthetic. The paraplegia is preceded by restlessness rather than by more marked symptoms. There is a very uncomfortable feeling of tightness around the waist or elsewhere as a constant symptom in myelitis. There is, in my experience, as a rule, absence of pain except when our patient is suffering from the combined meningo-myelitis, of which I shall presently speak. In simple myelitis I do not think we have much pain in the spine or extremities. There is an absence of spasmodic symptoms. As a very early symptom there is a want of control over the bladder, which depends upon a paralysis of the accelerator urinae and compressor urethrae muscles. There is a want of control over the rectum also, caused by paralysis of the sphincter ani. There is absence of tenderness on pressure in any part of the spine. There is an altered sensibility to heat and cold, by which a feeling of burning is felt when a sponge soaked in moderately warm water or a piece of ice is applied immediately above the seat of inflammation.

There is annihilation of reflex excitability.

There is diminution of electro-motility and electro-sensibility in the paralyzed muscles.

There may or may not be priapism.

The urine is generally alkaline, but neither always or necessarily so.

There is marked difficulty in breathing. The state of the circulation is asthenic.

There is a tendency to bed sores, and there is in simple myelitis absence of head symptoms.

In our patient who has suffered a severe injury to his back we very probably may have co-existing cerebral meningitis, spinal meningitis and myelitis, and the symptoms will be those of meningitis or myelitis as the one or the other preponderates. Our patient finally, as the result of nervous shock from an injury to his back, may escape organic trouble but develop spinal anemia and marked hysteria, lasting many months.

Meningo-myelitis is a very serious disease and one which devitalizes the whole system. If our patient recovers he is probably a broken-down man and we must hereafter keep him on cod liver oil, phosphorus, arsenic and bichloride of mercury, with electricity to improve the general nutrition. Our patient who has had a spinal injury may have his vision very materially impaired. There may be a weakness of sight, an intolerance of light, double vision, amblyopia, paralysis of accommodation and anomalies of refraction. These optic lesions are due to extension of meningeal troubles to the cerebrum. If the brain is unaffected the impairment of sight may be due to the action of the sympathtic nerves. The filaments of the sympathetic that supply the eye take their origin from that part of the spinal cord which is contiguous to the origin of the first pair of dorsal nerves and the portion of the cord which extends from the fifth cervical to the sixth dorsal vertebra possesses a distinct influence on the eyes and vision. I consider it certain, therefore, that we get an affection of the optic disc and its vicinity from the various disturbances of the spine consequent upon injuries to the back. These optic lesions are principally due to a cerebral meningitis that commenced as a spinal meningitis. We have perverted, impaired or lost sensibility of the optic nervous tract as the result of spinal concussion, with atrophy of the optic disc as the final stage. Where the brain is unaffected the loss of sight is due, therefore, to the transmission of the morbid action from the cord to the vessel of the eye by the agency of the sympathetic nerve rather than by extension of inflammation.

The medico-legal aspect of a case where there has been a severe injury to the back, causing concussion of the spine, I should state very decidedly but briefly: Our patient's mental and physical vigor are gone, and if the changes have been organic in the cord and brain, gone probably forever. He never can be the same man as before the injury. Death is far preferable to a life of hopeless invalidism, as many such patients must ever after lead. My prognosis in these cases is always very grave, if, after a year or two has elapsed from the time of the occurrence of the accident, the symptoms of meningo-myelitis either continue to be gradually progressive, or, after an interval of quiescence, suddenly assume an increased activity. Cases of injuries to the back without apparent mechanical lesion may die, first, at an early period by the severity of the direct injury; second, at a more remote date by the occurrence of inflammation of the cord and its membranes, and, finally, after the lapse of several years by the slow and progressive development of structural changes in the cord and its membranes. Our patient, if he does not die, may have a mitigation of his symptoms—an amelioration, but a thorough cure after severe spinal concussion never, or very rarely.

My prognosis in these cases is always very guarded. The chances are decidedly against our patient as regards complete recovery.

The general health, I think, tends progressively to break down, and if our patient gets up a chronic myeli-

tis the chances are that he will die in a few years. Those cases are the most favorable in which the symptoms attain their intensity soon after the injury, while a long interval between the receipt of the injury and the development of the spinal symptoms is unfavorable to our patient's recovery. The treatment is rest, counter-irritation, nerve sedatives and the constant current of electricity to the spine. For a constitutional treatment I prefer iodide of pet. bark and bichloride of mercury with ol. morrhuae. The constant current is indicated when our patient has developed a spinal anemia, and the phosphide of zinc and strychnia are valuable also. In inflammatory states of the cord electricity and strychnia would be contra-indicated, while ice bags and ergot would do good. We must give our patient cheerful surroundings and build him physically and mentally, and in exceptional instances I have seen complete recovery.

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1. It is important from a medico-legal point of view to remember that from an injury to the back we may have unsuspected fractures of some of the vertebrae and that, although there may be no head symptoms and no head injury and no paralysis, yet the injury inflicted may be of a fatal nature, although life may be prolonged for several days until death occurs from some accidental movement.

2. We may also have injuries to the back or spine occurring that are necessarily fatal without any direct blow on the spine, but from falls on the head. We may get an inflammatory softening and disintegration of the cord in such cases.

3. We may have many diverse kinds or varieties in the extent and degree of paralysis of motion and sensation. Of course, the symptoms in any given case will be varied in character and extent according to the location of the injury, the force with which it has been inflicted and the amount of organic lesion that the delicate substances of the spinal cord has suffered from by the shock or jar that has been inflicted upon it.

4. We may have a severe contusion with paraplegia and an unsuspected laceration of the intervertebral ligaments, followed by death in a few days.

5. We may have a slowly-developed spinal meningitis from a direct injury to the back in railway collisions, terminating eventually in death.

6. We may have a direct injury to the back and slow development of paralytic symptoms.

7. We may have compression and concussion of the cervical spine from a blow on the head, with paraplegia and a slow recovery.

8. We may have falls from horseback or from carriage accidents,with concussion of the spine, immediate paralysis and complete recovery.

9. We may have a direct injury to the back without apparent mechanical lesion, followed by a paralysis of one limb only.

10. We may have a concussion of the spine by falls on the back, followed by partial paralysis of sensation and motion of the lower limbs without affection of the sphincters and terminating in incomplete recovery.

11. We may have falls on the back, with partial paraplegia and recovery.

12. We may have cases of slight injury to the head and back, followed by serious, persistent or fatal results.

13. We may have epilepsy appearing by transmission in children whose parents have become epileptic by an injury to the spinal cord.

14. We may have hyperesthesia, anesthesia, pains and perverted sensations of all sorts and kinds in cases of spinal concussions from injuries to the back.

15. After an injury to the back we may have complete recovery, incomplete recovery, permanent disease of the spinal cord and meninges, or finally death.

16. We may have a terrible nervous shock resulting from injuries to the back, no immediate effects, a chronic meningitis of the cord and base of the brain and an imperfect recovery.

17. We may have a violent fall, with no injury externally apparent on the back or head, in which the patient is much shaken, develops concussion of the spinal cord and makes a very slow recovery.

18. These general shocks, with symptoms of spinal concussion and meningitis, are generally the result of a railway collision.

19. We may have sprains or violent wrenches of the back or spine, followed by every variety of harm to the spinal column, ligaments, the cord or its membranes.

I have a patient now under treatment, where as a result of a fall affecting the sacral, gluteal and lower lumbar regions, my patient suffers intensely over the left sacro-iliac synchondrosis. There is great tenderness on pressure and the pain is greatly increased by movements of all kinds. There is no external sign of any injury, such as swelling, heat or discoloration. My patient cannot hold herself erect without an increase of the pain and she, therefore, stoops forward a little and inclines to the left side. She drags the left leg perceptibly. She evidently in falling bruised the aponeurotic and fascial structures in this region and severly sprained the sacro-vertebral, ilio-lumbar, the sacro-iliac and the sacro-sciatic ligaments by her severe accident. The question in her case now is, Does absolute sacro-iliac disease exist? I am afraid the prognosis in her case, as in a great many of the cases we meet with in practice resulting from injuries to the back, will be—progressive.

DETERIORATION.

It will be a most interesting clinical study, and one of the very greatest medico-legal importance, if the New York Academy of Medicine would appoint one of its best surgeons, like Drs. Bull or Weir, to cooperate with some Brooklyn surgeon, like Dr. Malcolm G. Parrott or Dr. Elliott Langstaff, or Professor Wright, of the Long Island College Hospital, to abtain access in the interest of science to those cases of the people who were shot down ten stories by the accident of Tuesday, November 17, to the elevator in the American Tract Society building, Nassau and Spruce streets, New York, and make careful and repeated examinations of these cases who were in the car, as it is highly improbable that any of them will escape such a concussion of the delicate nerve elements of the spinal cord as will provoke a traumatic lesion. I should rather be inclined the doubt the quality of our resources in diagnosis than to suppose that such a severe shock could take place and the cerebric nervous system escape injury. Additional interest attaches to these cases on account of the recent writings of men who are always called into Court in railway accidents to testify to the fact(?) of there being no such thing as concussion of the spine resulting fatally from railway collisions. Professor Frank H. Hamilton, than whom there were few better surgeons in the United States, became so disgusted with this species of testimony in cases for damages for such injuries received that he refused during the latter part of his life to appear in Court as an expert at all. To imagine that such a man had his opinions altered on any case by reason of his receiving a fee was the most absurd thing imaginable; for his opinions were the result of well-matured thought, wide observation and great wisdom.

68 West 131st street.

Editorial

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ACUTE MENINGITIS FOLLOWING CHILDBIRTH.

It is rarely that one has opportunity to witness cases of acute simple meningitis in the adult female in private practice, whether occurring after childbirth or not. Two such cases have come under our observation. One in November of 1890 and one in November of the present year. Both cases developed about two and a half weeks after remarkably easy labors, in women of strong constitution, with no symptoms of renal or other disease and no septic contaminations.

The first case was that of an American woman, and developed suddenly with convulsions, subsultus tendinum, picking at bed clothes, moderate fever (101-102 degrees F.) with subsequent coma, further rise of temperature and intensified symptoms of acute meningitis, and with death in forty-eight hours from first symptoms.

In this case the labor had been precipitous, the child having been born before the arrival of the physician. Everything seemed normal, however, there being no lacerations, and the subsequent two weeks passed without event. She left her bed on the tenth day and felt usually well.

The last case, a healthy, strong Irishwoman, was delivered of a child at term with the assistance of ether and forceps. The perineum was slightly torn, but immediately repaired and union, subsequently, was perfect, the three stitches necessary being removed on the tenth day. Some irritation was set up in the bladder, probably from catheterization, but after a couple washings of the bladder with a borax solution this disappeared. She nursed her baby and got up on the fourteenth day, apparently well. A day or two afterwards she complained of frontal headache and that light hurt her eyes, but did not call her physician until convulsions developed sudden-

ly on the evening of the seventeenth day after confinement.

The early symptoms in this case were misleading, and the writer did not see the patient until the morning following the convulsive attack, when coma had supervened and the pupils were not responsive to light. A diagnosis based on the experience of the former case was made of acute simple meningitis.

The puzzling symptoms of this case were the following:

Pulse 100, full, strong, compressible.

Temperature 101 F. (moderately low for meningitis).

The absence of vomiting at any time during the attack or prior thereto.

These facts might point rather towards hysteria than meningitis, for one naturally looks for vomiting and a higher temperature in the latter disease.

Treatment consisted of ice to the head and fly blisters. Bromides had been administered during the convulsive stage, freely, but during coma the patient could not swallow, so they were discontinued. Bleeding might have been of use at this stage, but, in discussion, considering the loss of blood after confinement, it was thought best not to apply it.

As the day wore on the pulse became more normal, and the temperature remained the same, but coma became more deep. A guarded prognosis was given.

The following morning Cheyne-Stokes respiration had developed, with a temperature of 103 1-2 degrees and a pulse of 180, strong and full.

These symptoms, of course, dispelled all doubts as to diagnosis and prognosis, and the woman expired some 52 hours after the first symptoms of headache.

The interesting factor in this class of cases has to do with their dependence or non-dependence on parturition. Either they were developed by some unforseen consequence of the puerperium, which caused the delayed symptoms of acute meningitis, or else they were simply a coincidence and had no real connection with the childbed state.

The latter view is the one evidently to be taken in the absence of any visible active cause, and we are to regard these cases not in the light of possible dependence on childbearing, but as a pneumonia or pleurisy might occur, the result of some exceptional acquirement.

The cases are of interest, as we know of none in medical literature parallel, and we can find no practitioner who recalls such complications in his obstetric experience.

No autopsy was permitted in either of these reported cases.

THE SYMPATHIES OF THE SKIN.

The various organs and tissues of the body are more or less associated by a mysterious mutual sympathy and in no instance is this more obvious than in the relations of the skin with the viscera. This delicate fabric contains all the elementary tissues, and is endowed with their individual attributes. It is a membranous envelope, interwoven with a labarynthine network of nerves, blood vessels and lymphatics, the blood vessels being the largest; and its intimate connections with the sympathetic cerebro-spinal nervous systems, through the agency of the vaso-motor nerves, place it in touch with every part of the body. In addition, its endless vascular communications, the continuity of tissues and reflex actions, combine to promote the power and diversity of sympathy that exists between the skin and the internal viscera. Thus, though there is little or no reciprocity between the different parts of the skin itself, it vibrates, so to speak, in accord with other organs, participating in their irritations and disorders, so that derangements of the

digestive, urinary, cerebral, respiratory and generative apparatus become associated and co-existent with bodily eruptions.

Sympathy between the stomach and the skin is most evident in small pox, when the coats of the stomach contract and expel its contents; the gastric irritation of dyspepsia and over acidity (and of doses of arsenic and antimony) is coincident with the acne of eczema; the duodenum sometimes ulcerates during the healing of a burn, and some articles of food give rise to erythema fugax, dermatitis and urticaria.

In albuminuria, boils and carbuncles aggravate the situation; eczema complicates vesical catarrh, pruritus, besides boils and carbuncles, is frequent in diabetes, while eczema is almost constant.

The uterus displays unwonted sympathy with the skin, and various eruptions, seborrhea, eczema, comedones, herpes, gestationis, miliaria, impetigo, attend menstrual disturbances, leucorrhea, pregnancy and the menopause. Ephelis and pruritus are often concurrent with suppressed lochia; chloasma gravidarum (milk tetter) occurs during pregnancy; erythema nodosum has a special affinity for the amenorrhea of young girls. Psoriasis, on the contrary, sometimes vanishes during pregnancy, to return in the course of lactation. The successful treatment of some forms of acne by the administration of ergot testifies to the sympathy of the skin with the uterus.

The brain is also in close sympathy with the skin. Cerebral disturbance and prolonged anxiety favor pityriasis, lichen, ecthyma and hematogenous jaundice; fright and horror cause goose skin or cutis anserira, and the integument acquires a tawny yellow tint under habitual grief.

The skin likewise sympathizes with the organs or respiration, as exemplified by the scurfy efflorescence and purpuric spots that mark the advance stages of phthisis, and asthma is often associated with psoriasis. Purpuric spots may also coexist with malaria, enlarged spleen or liver, and during the use of chloral. Eczema in children is often times accompanied by disordered liver, and in adults it is closely identified with gout and the uric acid diathesis.

Lastly there must needs be a sympathetic affinity between the skin and the organs of generation, for cutaneous eruptions commonly occur in conjunction with inordinate virility, and the existence of pruritus is sufficient to provoke sexual instinct.

Louis Lewis, M. D.

COCAINE
C.P. ANHYDROUS CRYSTALS.
STANDARD OF PURITY
THE WORLD OVER.

MURIATE
BOEHRINGER - B.& S.
DISPENSED BY
ALL DRUGGISTS

Electro-Therapeutics

DR. S. H. MONELL, Brooklyn, N. Y., Editor.
Chief Instructor of the Brooklyn Post-Graduate School of Clinical Electro-Therapeutics.

THE PHYSIOLOGICAL ACTION OF PERIODIC INDUCED CURRENTS IN GYNECOLOGY.

AUGUSTIN H. GOELET, M. D.

In employing periodic induced currents for therapeutic purposes several things must be taken into consideration, viz.

1. Whether the current is an interrupted current of one direction or a truly alternating current.
2. The comparative relation of the two qualities of the current E. M. F. and volume or amperage.
3. The frequency of the periods or interruptions.
4. The duration and method of application.

Since everything of which these currents are capable therapeutically depends upon the degree and character of the stimulation they produce the importance of a consideration of these points is self-evident.

If we recognize in the interrupted induced or faradic current a current of one direction endowed with polarity, which we must do if only the break current has sufficient E. M. F. to be appreciable through the resistance of the human tissues, it must be admitted that this current is capable of exerting some electrolytic action, though it may be slight. It is a demonstrable fact that the faradic current does produce electrolytic action, and that it is a current of one direction when employed through the resistances of the human tissues. For this reason I have designated it an interrupted induced current. It is true that through low resistances, such as galvanometer placed in the circuit, it appears to be an alternating current, since upon making and breaking contact of the vibrator slowly the needle will be deflected to an equal degree on either side. But the make and break currents are of such unequal force (the break current being estimated to be 13 times stronger in E. M. F. than the make current) that when applied through resistances like the structures of the body the break current only has sufficient force to penetrate and produce an impression, and it is only this phase of the current which we need take cognizance of. As a proof of this take a sponge electrode in each hand, turn on the current and make and break contact at the vibrator slowly. A contraction is produced only when contact is broken at the vibrator, and no sensation is experienced when contact is made. To

demonstrate that this current does exert an electrolytic action take a solution of starch to which some iodide of potassium has been added and insert into it electrodes of fine platinum wire connected with the terminals of the secondary circuit. A few seconds after the circuit has been turned on a discoloration will be noticed at one pole due to the formation of iodide of starch. The difference in the amperage of the current from the fine and coarse wire coils can likewise be demonstrated in the same manner. With the fine coil current discoloration is scarcely noticeable, whereas with that from the short, coarse wire coil the reaction is very pronounced. Since the amperage of these induction currents as employed in medicine is insignificant by comparison with even the weakest constant current used, the electrolytic action may, in the main, be disregarded; yet we must recognize the effect upon nerve tissue, since an inverse current (or one in opposite direction to the nerve current) diminishes the functional activity of the nerve, and a direct current (or one in the same direction as the nerve current) increases its functional activity. In this respect the interrupted induced current possesses an advantage over the alternating, which is constantly reversed and has no polarity, an advantage by no means to be ignored in certain conditions.

The stimulating property of these currents depends more perhaps upon the relationship of the two qualities E. M. F. and value than upon anything else. Hence the advantage in favor of the interrupted induced or faradic current, which is susceptible of greatnating or static induced currents. In the faradic apparatus the E. M. F. and value of the current can be very conveniently varied by changing the length and size of the wire of the secondary winding. The advantage then of a number of secondary coils having different lengths of the same wire and different sizes of wire is that the stimulating property of the current may be conveniently and gradually increased as desired.

The frequency of the periods has an important bearing upon the E. M. F. of the current generated as well as upon the physiological effect produced. The more frequent the periods the more soothing the application as a general rule and the more infrequent the more irritating or stimulating they become.

The method of application is quite as important as any of the other points that have been considered, since a stimulation may be made exciting or soothing according to the manner in which the current is applied. For instance, if the current is applied so as to maintain a constant state of excitation throughout the application, causing the subject to experience a moderate degree of irritation during the entire period of its administration, by constantly and rapidly increasing the strength even the fine wire current will fall short of sedation and the structures to which it is applied will be left in a state of stimulation. If, on the other hand, the current is applied so that it is barely perceptible throughout the application, its strength being gradually increased as insensitiveness becomes apparent, and the application is continued until complete relaxation and insensitiveness are produced, the result will be a sedation.

The general effect of periodic induced currents then is a muscle, nerve and circulatory stimulation, the degree and nature of this stimulation depending upon the E. M. F. and amperage of the current employed, the rapidity of the impulses and the method of application.

One of the most important effects produced by these currents is stimulation of increased tissue changes (i. e., increased absorption of oxygen and corresponding increased elimination of carbonic acid by the tissues), and coincidently increased nutrition. Hence they increase the functional activity of organs brought under their influence. This effect of the current can be readily demonstrated. For instance, its power to increase perspiration may be shown by grasping in one hand the bipolar electrode and using the fine wire current as

strong as it can be borne for a few moments. The hand becomes bathed in perspiration. Another effect observed is that the hand, but more particularly the fingers, soon become pale and bloodless, owing to the violent tetanic contraction of the muscles and the effect of the current upon the vasomotor supply. It is just this action of a powerful alternating current used in electrocution which causes the death of the criminal. As I pointed out in a recent contribution upon this subject, the intense muscular contraction throughout the body forces the blood to the internal cavities and especially the brain, producing interstitial hemorrhages. This may be regarded as an exaggerated example of the effect of these currents upon the circulation. Improvement in the general nutrition of the patient has often been noted, even when only local applications have been made to the female pelvis, the improvement in the general health being out of proportion to that of the local condition.

The effect of these currents upon the capillary and lymphatic circulation is marked and most important. It is no doubt that their power to promote rapid absorption of inflammatory exudates may be attributed directly to stimulation of the capillary and lymphatic circulation.

I will venture to offer an explanation of how this result is brought about.

Faradic stimulation quickens the capillary circulation (1) by exciting an increased vermicular contraction of the smaller arteries, the blood pressure is augmented. This causes momentary distention of the capillary vessels, the reaction from which, owing to their elasticity, empties or unloads them into the veins. In case of any obstruction in the capillary vessels this distention, together with the increased blood pressure, favors its removal.

2. By stimulating contractions of adjacent muscles, the veins are emptied and a void is created in their intervalvular spaces, which invites the blood from the overloaded capillaries.

Increased activity of the lymphatics is brought about by faradic stimulation:

1. By stimulating the process of absorption, and

2. By stimulating contraction of adjacent muscular structures, the circulation in the lymphatic vessels is increased. These vessels being supplied with valves similar to those found in veins, the contraction of surrounding muscles empties the intervalvular spaces and invites the flow of lymph from the lymph spaces where absorption takes place.

As the result of this action upon the capillary circulation and lymphatics, pelvic congestion is relieved and rapid absorption of infiltrations and exudations is accomplished. This agent is unquestionably the most powerful, the most certain and therefore the most valuable vasomotor constrictor which we possess.

Perhaps the most important effect of periodic induced currents of high e. m. f. and great frequency is the production of sedation and the relief of pain. As pointed out by Duchenne, the special action of these high tension currents is upon the sensory nerves, and it partakes of the nature of an excitation, but this excitation or stimulation will result in sedation if certain conditions are observed. This appears to involve an inconsistency, but you will recall the fact that opium is a cerebral and circulatory stimulant, yet its effect is sedative.

It is very necessary to understand that two results may be obtained from the application of fine wire currents in particular, viz.: stimulation and sedation.

Stimulation may be of two kinds:
1. Exciting, when it is irritating.
2. Sedative, when it is non-irritating or soothing.

Very much therefore depends upon the method of application in bringing about the result desired. If the current is applied so as to maintain a constant state of excitation throughout the application, causing the patient to experience a moderate degree of iritation during the entire period of its administration by constantly and rapidly increasing the strength of the current, the result

will fall short of sedation, and the parts wil be left in a state of stimulation. The application need not be painful to produce this result. If, on the other hand, the current is applied so that it is barely perceptible throughout the application, its strength becomes gradually increased as insensitiveness becomes apparent, and the application is continued until complete relaxation and insensitiveness are produced, the result will be sedation.

The former method of application is adapted to moderately insensitive conditions for promoting absorption of exudates and relieving the engorgement of the pelvic vessels when no inflammation exists and pain is not a prominent symptom. The latter method of application is appropriate for the relief of pain, acute congestion (even inflammations) of the pelvic organs, and to promote the absorption of recent exudations, and in fact should be employed in all acutely sensitive conditions.

The duration of the application likewise influences the result. A five or ten minutes' aplication may suffice for producing the form of stimulation described above, but sedation, which will be prolonged and satisfactory, is seldom attained with an application of less than 15 or 20 minutes' duration.

The relief of pain which follows the application of these currents in the manner described for producing sedation may be explained in this way, viz: The rapid succession of impulses imparted by the interruptions may be regarded in the nature of a percussion, which induces a condition of concussion of the nerve filaments, impairing their function to conduct painful impressions. The intense stimulation of the motor nerves produces a tetanic contraction of the muscles, which eventually wears out their contractility, producing relaxation or a temporary local paralysis that means rest for the diseased parts which they encompass. It is probable also that relief of the congestion upon which the pain may in great measure depend is another way in which this result is reached.

The rapidity of the interruptions has likewise an important bearing upon the result, since the more rapid they are the more soothing the effect. Therefore, for a sedative effect they should be as rapid as possible. In using the coarse wire current for muscle stimulation, however, the interruptions should be slow, so as to allow an alternate contraction and relaxation, similar to the normal physiological action of the muscle.

The frequency of the applications and the subsequent behavior of the patient are also to be considered. Three times a week may be sufficient when a stimulation is required, and the patient may not be restricted in her movements especially to attain this result. But sedative applications should be made every day, in some instances several times a day, and to be productive of the best results they should be made after the patient has retired for the night, or she should be made to recline for at least an hour or two afterward. This is not always essential, however, for in very many instances the relief obtained continues for hours, even when the application is made in the physician's office and the patient is permitted to exercise moderately afterward.

As a therapeutic measure for the relief of pelvic pain and congestion and pelvic inflammations and their results, infiltrations and exudations, this form of electricity is incomparable with any other agent which we possess. It is to be regarded not only as a remedy against the symptoms accompanying the diseases of the female pelvic organs, but often as a curative agent as well, though frequently it serves only as an auxiliary to other measures. In cases where the disease is so far advanced that a cure cannot be effected and some radical operation is necessary, it serves an exceedingly useful purpose in placing the patient in the best possible position to withstand it and aids its success by improving greatly the local condition and her general nutrition.

The coarse wire current is particularly serviceable where there is loss of muscular tone and venous en-

gorgement, such as in subinvolution, but it is absolutely contra-indicated in sensitive and inflamed conditions.

I have purposely laid more stress up periodic currents of high frequency and high E. M. F. because they cover a larger field of usefulness.

(To be Continued.)

Book Notes.

BOOKS AND PAMPHLETS RECEIVED.

THE WANT OF COLLEGE INSTRUCTION IN ELECTRO-THERAPEUTICS. President's address, delivered at the opening of the Sixth Annual Meeting of the American Electro-Therapeutic Association, held at Boston, September 29 and 30, and October 1, 1896. By Robert Newman, M. D. New York. Reprinted from and published by the Electrical Journal, Chicago, October 1, 1896.

PROPHYLAXIS IN INFECTIOUS DISEASES OF CHILDREN. A. G. Wollenmann, M. D., Ferdinand, Ind. Reprinted from the Medical and Surgical Reporter, February 29, 1896.

THE PROPAGATION, PRESERVATION AND USE OF VACCINE VIRUS. By Francis C. Martin, M. D., Boston, Mass. Reprinted from the Medical Record, May 30, 1896.

EXPLORATION AND TREATMENT OF FISSURES FROM SKULL FRACTURES. Read in the Section on Surgery and Anatomy at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896. By H. H. A. Beach, M. D., Boston, Mass. Reprinted from the Journal of the American Medical Association, May 30, 1896.

PREVENTION OF TUBERCULOSIS. Read at the Pennsylvania State Medical Society, Harrisburg, Pa., June 19, 1896. By E. B. Borland, M. D. Reprinted from the Journal of the American Medical Association, August 1, 1896.

THE SOLVENT PROPERTIES OF THE BUFFALO LITHIA WATERS OF VIRGINIA. By Geo. Halsted Boyland, Paris, France, M. A., M. D., etc., formerly professor in the Baltimore Medical College, etc. Reprinted from the New York Medical Journal for August 22, 1896.

INGUINAL AND SCROTAL CYSTS, SIMPLE AND COMPLICATED, IN INFANTS OR YOUNG CHILDREN. By Thomas H. Manley, M. D. Reprinted from American Medico-Surgical Bulletin, September 12, 1896.

NOTES ON INGUINAL SCROTAL CYSTS. By Thomas H. Manley, M. D., of New York. From the Medical News, July 11, 1896.

ACUTE RHEUMATIC IRITIS, WITH CASES. From the Post-Graduate. Synonyms—Arthritic Iritis; (Fr.) Iritis Rheumatismale; (Ger.), Iritis Rheumatica. By A. Britton Deynard, M. D.

Current Medical Literature.

THE TREATMENT OF ACUTE NASAL AND PHARYNGEAL CATARRHS.

The frequency of nasal and pharyngeal catarrhs in this climate, and the unfortunate results when the Eustachian tubes or the broncial mucous membranes become affected secondarily, render a condition, trivial in itself, of sufficient importance to warrant the suggestion of a treatment which my own experience leads me to think of great value.

Having tried local treatment as fully as the time-honored practice of administering diaphoretics with hot baths and warm blankets in the acute stage, and often with disappointing results, a consideration of what I believed to be the pathology of the condition led me to adopt the following measures, with which I have increasing reason to be satisfied:

At the onset of the acute attack I give a hypodermic injection of sulphate of atropine, gr. 1-150, combined with sulphate of morphine gr. 1-6, and invariably find in the course of a few minutes all the symptoms subside. The nasal and pharyngeal mucous membranes dry up, the irritation and frontal distress cease, and as the effect lasts for some hours, the vessels of the mucous membrane have time to recover tone and the nerves, no longer irritated by the local congestion and constant sneezing, rapidly quiet down and the whole attack aborts.

The predisposing cause of these acute catarrhs is doubtless to be looked for in a lowered condition of the nervous system, and nervine tonics and improved hygienic surroundings are of the first importance, but the exciting cause is frequently a chill or the inhalation of some irritant, such as dust or the pollen of certain flowers, as in hay fever.

—Frank Elvy, M. R. C. S., L. R. P. C., Eastbourne, in British Med. Journal.

THE WOODBRIDGE TREATMENT OF TYPHOID.

Dr. J. A. Crook, of Jackson, Tenn., read a paper at the meeting of the Tennessee Medical Society, at Chattanooga, April 14, 1896, entitled "The Rational Treatment of Typhoid Fever" (Journal of the American Medical Association, August 8, 1896). After giving a synopsis of the history of a number of patients, he stated that he had used only Nos. 2 and 3 of Dr. Woodbridge's prescriptions. This he did purposely, as No. 2 contained the same amount of everything as No. 1, and four times as much Carbonate of Guaiacol, and the addition of one-sixteenth grain of thymol. He is confident that the virtue of these prescriptions is increased, if not dependent, on one or both of these drugs; and it seems more rational to give these at once, and get the patient earlier under the influence of these remedies. Besides, it is contrary to his idea of treating a patient to disturb him and his stomach every fifteen minutes with medicine. Dr. Crook concludes as follows:

1.That the Woodbridge treatment far surpasses all previous ones in its results.

2. That it is entirely harmless, and can be given without hesitation by physicians in all typhoid fever cases.

3. That if begun early and persisted in the disease is materially shortened, and serious consequences and sequellae, such as tympanites, glazed tongue, nervous prostration and delirium are prevented.

4. That it actually cures typhoid fever as certainly as quinine cures malaria; and that under it there are but two stages of this formidable disease, first, that of rapid decline of temperature, and second, that of convalescence.

Dr. R. C. Justice, of Poland, Ohio (The Journal of the American Medical Association, August 1, 1896), writes to say that he is surprised and amazed at the success of the Woodbridge treatment of typhoid fever. The unusually dry summer of last year caused the wells that supplied the town with water to become almost dry, and the surface drainage from the first slight autumn rains caused their infection with typhoid fever germs. Some twenty cases occurred in the town of about 600 inhabitants. All the cases were under Dr. Justice's care, and most of them occurred in one street, the wells of which were undoubtedly fed from a single stream. The attacks were unusually severe from the beginning, the temperature rising rapidly and soon ranging from 103 to 103 1-2 degrees in the morning, and from 104 to 105 degrees Fahrenheit at 6 P. M. Intestinal hemorrhages occurred in six cases; one had seven hemorrhages, some others had one to four.

The Woodbridge treatment was carefully and faithfully followed from the beginning to the end of all the cases; none died, and all are well to-day and following their usual avocations, light of heart and buoyant of spirit, with no dregs left behind, as with the old method of treatment. The doctor believes, from the severity of the onset of the disease, that he would certainly have lost five of them had they been treated as in previous epidemics. All the facts being considered, he does not believe this to be an overestimate of the probable mortality of the epidemic under other treatment.

Dr. Justice has now treated forty-eight cases by this method, and has been successful in every instance. The average duration of illness has been eighteen days; the average duration of treatment thirteen days. He concludes his letter with the earnest advice not to be tempted to change methods, but to continue the antiseptic treatment to the end, with the reward of seeing the patients recover rapidly.

Dr. R. Sayre Harnden, of Waverly, New York (The Journal of the American Medical Association, August 1, 1896), has been for the last twenty five years a believer in the treatment of typhoid fever by intestinal antisepsis, and in the endeavor to prevent the fermentative, putrefactive, and septic conditions that result therefrom. During the past twelve years he has treated seventy-two cases without any fatality. During the past year he has used the Carbonate of Guaiacol in twenty cases with the most excellent results. In nine of these cases the disease was checked on the fourteenth to the seventeenth day after the initial chill. In many of these cases the symptoms for a few days were severe, indicating a grave type of the disease, but almost invariably a lower plane of fever, and a marked amelioration of all the symptoms was established, the tongue and skin becoming moist, delirium diminishing or disappearing, tympany vanishing, and the patient sleeping and resting better.

Dr. Harnden employed the Carbonate of Guaiacol in 1-6 grain tablets every hour through the day, and three to four times during the night, if the patient was often awake, for several days. The drug was continued every two hours during the day while the fever lasted. He observed the usual proportion of hemorrhages and relapses, and he does not believe that the antiseptic treatment prevents either. But he thinks that the

relapses are not due to reinfection, but rather that the typhoid element is held in abeyance in some of the glands or adjacent lymphatics, manifesting itself after the subsidence of the first attack in a similar manner as do symotic diseases that are held in abeyance during the latter period of pregnancy.

THE LOCAL USE OF HYDROCHLORIC ACID IN TUBERCULOUS NECROSIS OF THE BONE.

J. H. Waterman (N. Y. Med. Journ., August 8) reports the results of a series of cases of bone necrosis of tuberculous origin which he has treated by the local use of hydrochloric acid. The acid was used in the concentrated form. The number of minims (2 to 6) injected in each case depended on the amount of bone diseased and on the general condition of the patient. It is preferable not to use the acid oftener than twice a week in order to obviate excessive reaction and pain. The tissues were sprayed with a 4 per cent. solution of cocaine or cocaine and morphine, or with chloride of ethyl, a few minutes before injecting the acid. The sinuses were thoroughly washed out with sterilized water in order to remove pus or detritus, and thus permit the acid to penetrate all the diseased bony tissue. The ordinary sterilized glass pipette was found to be the most practical means for the application of the acid. The tube was introduced to the bottom of the sinus, and the contents deposited directly upon the necrosed structure. After this the author usually allowed a minute to elapse, next irrigated the sinus with a saturated solution of bicarbonate of sodium, and then applied a wet myrrh dressing. His object in using the latter in preference to dry dressings was because of the marked foetor noticed in many instances after the first two or three injections. This is accounted for by the destruction of soft tissues; it was more pronounced when the patient moved and the application was not made directly to the bone, but dropped partly on the surrounding tissues. The author gives details of 8 cases in which the method was used, among which there were four "apparent cures." The conclusions which he thinks may be drawn from the cases are as follows: (1) No evil effects have resulted from its use. (2) The use of the acid in its concentrated form is preferable. (3) When the area of necrosis is extensive operative methods are advised. (4) The action of the acid is limited to the necrosed area, whereas curetting may remove both diseased and healthy bone. (5) By the disintegration of the dead bone the newly-formed tissue has a better opportunity for its more rapid development.

TREATMENT OF TIC-DOLOREUX.

C. L. Dana (Chicago Medical Recorder, August, 1896) describes a method of treatment which he has adopted for two years in hospital and in private practice with satisfactory results. The method consists of the following procedures: (1) The hypodermic injection of massive doses of strychnine. (2) The administration of stimulants, such as iodide of potassium and of tonics, including especially large doses of tincture of iron. (3) Rest in bed with light diet and diuretics. The treatment admits of no halfway measures. The patient must take the full course, and sometimes even a second or third course. (1) The use of strychnine. This is given in single daily doses, hypodermically. He usually begins with 1-30 grain, and this is very slowly increased until by the fifteenth or twentieth day 1-6 to 1-4 grain is given. Most patients cannot take over 1-5 grain, an excess being shown by stiffness in the jaws and legs, trembling and nervousness. Sometimes the largest doses are not well borne, and are not advisable; but this is rare. He has noticed that the large doses, 1-15 to 1-5 grain, often have a decidedly anodyne effect, quieting the patient for hours like a dose of mor-

phine. Sometimes the largest doses temporarily increase the pain, but this is certainly rare. The best results are in those who feel the anodyne effect. After reaching the maximum dose the strychnine should be continued for a week or ten days, and then gradually reduced, so that by the end of five or six weeks the dose commenced with is reached. The drug is then stopped, and the patient is placed on iodide of potassium 5 grains t. d., increased to 20 grains, and tincture of iron 5 minims, increased if possible to 20 minims, and well diluted. In some cases salicylate of potassium replaces the iodide or nitro-glycerine is added to the iodide of iron. Rest in bed is a point in the management of tic which cannot be too stringently insisted upon. The room should be kept as nearly as possible at 68 degrees Fahrenheit, and the air should be moderately humid. At the end of four weeks the patient is allowed to go out for two hours daily, and at the end of six weeks he can resume his ordinary avocations. Details are given of 8 cases (6 men, 2 women) treated in this way; the ages ranged from 43 to 70. The branches of the trigeminal nerve most affected were in 6 of the cases the second, or the second and one other branch. The duration of the malady before the line of treatment described was adopted ranged from two to ten years, averaging six years. Relief was obtained in all but 2 of the cases, and 1 of these the method was not fully tried. The duration of the relief in 5 cases has been from one year and a half to two years. In 2 cases treatment was finished four months ago. In three cases there was a slight alubuminuria. In one case the disease was complicated with a motor tic, and in one case it was complicated with severe heart lesion, as well as albuminuria. The maximum dose of strychnine in all cases reached 1-5 to 1-4 grains. The author concludes, after much disheartening experience with aconite, iodide, gelseminum, salicylates, tonics of various kinds, electricity, etc., that the method of treatment above described is the most useful.

A NEW METHOD OF ARTIFICIAL RESPIRATION.

Calliano (Gazz. degli. Osped., August 16, 1896) describes a new method of artificial respiration which he has practiced with success in cases of asphyxia. The patient is placed in Sylvester's position, and the arms are then drawn up so as to fully expand the thorax, and then fixed above and behind the head by tying the wrists together. In this position respiration is induced by simply pressing with the hands on the thorax some eighteen or twenty times a minute. The advantages claimed for this modification of Sylvester's method are: (1) Its greater simplicity. (2) The much smaller amount of labor required, and lessened fatigue of the operator. (3) The absence of danger from contusion of the shoulder joints. (4) The ease with which such a method could be taught to and practiced by uneducated and untrained people.

TREATMENT OF URIC ACID GRAVEL.

G. Klemperer (Berl. klin. Woch., 1896, No. 33) discusses the medical treatment for the prevention of urinary concretions of uric acid, and the after-treatment to prevent recurrence when such concretions have been removed by surgical intervention: (1) There must be sufficient diuresis; one grain of uric acid requires 7 litres of water for its solution at the body temperature. The patient, therefore, must drink sufficient water. Saline and drastic purgatives should be avoided, because they tend to make the urine more concentrated. If there be constipation water enemata may be used, which not only induce the bowels to act, but often favor diuresis as well. (2) Much sweating and much exercise should be avoided; in this respect the treatment of uric acid calculi and gravel differs from that of gout. (3) The amount of uric acid in the urine should be diminished. Uric acid must not be regarded as merely representing a stage in the

production of urea, but as representing a special nitrogenous metabolism. It is, in fact, the result of the oxidation of nuclein, an albuminous substance which is contained in the cell nuclei, and distinguished by richness in phosphorus. To diminish the amount of uric acid in the urine suitable foods containing little nuclein should be taken, such as milk, cheese, white of egg, bread and vegetables. Foods, such as thymus, liver and ordinary meats should be taken in moderation only, because they are specially rich in nuclein. The oxidation of the nuclei of leucocytes and other cells of the human body, some of which are of course constantly being destroyed, furnishes perhaps 0.3 to 0.6 grains of uric acid daily. The uric acid excretion is hardly greater when only milk is taken than it is during fasting. After 2 litres of milk the urine contains 0.5 to 0.6 grains uric acid. After 500 grains of meat the urine of the same man contains about 1 to 2 grains uric acid; after 500 grains of thymus it will contain about 3-4 grain more uric acid. Brain and kidney cause about the same amount of uric acid to be excreted as ordinary meat does. There is, however, as Horbaczewski showed, no general quantitative relation between the nuclein in the food and the uric acid in the urine, for nuclein may also be excreted as urea, just as uric acid may be when it is taken by the mouth. The difference in different individuals seems to depend on some persons being able to transform the uric acid formed in their bodies more readily into urea than other persons can. The ingestion of xanthin bodies leads, just as the taking of nuclein does, to an increase of uric acid in the urine; therefore, excess of tea, coffee and meat extract should be avoided. In regard to alcohol it is uncertain whether any special influence is exerted on the uric acid excretion. Excessive exercise, according to some authors, increases the excretion of uric acid, and should therefore be avoided. (4) The acidity of the urine should be kept below a certain level, to prevent the precipitation of uric acid. For this purpose a draught containing sodium carbonate (for example one of the alkaline mineral waters), or a citrate, may be taken in the forenoon and late in the afternoon; the acidity of the urine is naturally diminished in most persons after midday. (5) Urea may be given by the mouth to increase the solubility of the uric acid in the urine. The solvent action of urea on uric acid was first demonstrated by Ruedel, at Heidelberg, six years ago. Rosenfeld, in Breslau, made therapeutic use of urea for this purpose last year, but Klemperer has employed it for nearly two years in the form of a 5 per cent. to 10 per cent. aqueous solution. He gives a tablespoonful of the solution as a dose, and has obtained satisfactory results.

Current Surgical Literature.

T. H. MANLEY, M. D., New York, Editor.

WHAT CONSTITUTES AN ACCIDENT?

The question of what constitutes an accident was considered recently in the following case, cited by the Medical News: A physician of Essex County, N. Y., while driving between Hayne and Ticonderoga, was overcome by exhaustion arising from an injury sustained a year previous. He stopped his horse and proceeded to give himself a hypodermic of morphin. His horse started suddenly and the needle was driven in further than he intended. Cellulitus ensued and he was disabled for 22 weeks. He brought suit against the Interstate Casualty Company, which had insured him "against bodily injuries sustained through external, violent and accidental means." The presiding Judge of the Circuit Court of Essex County dismissed the complaint. The Albany Court of Appeals, by a majority of three to two, decided that the jury should have been allowed to determine whether the injury was accidental or not. The Court held that the injury could not be called accidental, if it was caused by the morphin or by the uncleanliness of the needle.

WHAT A SURGEON OUGHT TO BE.

One of the interesting characters of the fourteenth century was the sergeant surgeon of Edward III, in 1346, John of Arden. He gives a "Description of ye qualities which ought to be in ye surgeon that performeth any operation in chirurgery: First, that he be devout. Secondlie, charitable to ye poor. Thirdly, to use few words. Fourthly, to avoid drunkenness. Fifthly, to be chaste both in words and gesture, as well as to fear ye not. Sixthly, not to undertake an incurable disease."

—Indian Medical Record.

IN CASES OF SEVERE INJURY TO THE FINGERS

By laceration or contusion, put the entire hand into a very ample soaking wet dressing. Do not trim off any pieces of flapping skin. Incision for drainage is all that is allowable until healing is very well under way. A half inch of boneless finger may be of great value to its possessor.

—International Journal of Surgery.

ON THE DIAGNOSIS AND TREATMENT OF PERFORATION OF THE INTESTINE IN TYPHOID FEVER.

M. Lerebrullet (Gazette Heb. f. Nov., '96) has submitted an important communication on above topic. Citing Dieulafoy, he says that gangrenous perforation of the appendix is a much more common complication of typhoid fever than is generally supposed. The writer strongly recommends laparotomy in perforation of any part of the intestinal

canal in the event of perforation when conditions warrant it.

In "ambulant" cases of typhoid this danger of perforation is most to be dreaded. It was well known by the older authors that the seat of perforation is commonly near the cecum. Noel, Guenen and Massey wrote that "the most common seat was near the head of the colon and not uncommonly in the appendix. In the appendix ulceration is determined by an impaction or a foreign body, with resulting inflammation and ulceration." They had each observed appendicular perforation and death in typhoid.

The term "appendicitis" then being unknown to clinicians the disease was allowed to go on to a mortal end untreated.

The writer attaches great importance to the necessity of the attending physician being on his guard for this dangerous complication and calling in the surgeon early when a diagnosis of perforation is made.

But to reach a definite diagnosis is wherein the difficulty often comes. Dieulafoy attaches great importance to a sudden falling of the temperature, to be quickly succeeded by hypothermia. He advises to be always suspicious when there is a sudden change in the temperature.

M. Brondel, one of the most distinguished clinicians of his time, affirmed that it was an incontestable fact that more lives were lost by intestinal perforation in typhoid fever than by any other cause. It usually occurred about the third or fourth week, though sometimes later.

Griesinger, an eminent authority, declared that "perforation was often attended with rigors, with a prompt elevation of the temperature." Homelle likewise observes that "a sudden and pronounced chill with severe abdominal pain and distension means rupture of the intestine."

M. Huntinel in his large experience agrees that certain pronounced thermal fluctuations have an important significance, taken in connection with other things, but warns against confounding that which goes with the algid collapse, for that pointing to perforation, and Griesinger adds, that in some cases the temperature changes are so variable in typhoid as to be of little definite value as an aid to the diagnosis of perforation. Finally it may be said, that while the diagnosis of perforation of the intestine in typhoid is sometimes exceedingly difficult, and often even when quite definite the patient's condition may preclude a laparotomy, yet when the pulse is good and the general state fairly good it should be considered. It goes without saying that in all cases of appendicular rupture no time should be lost in operating.

A SERIES OF SIXTY-FOUR CASES OF OPERATIONS ON THE KIDNEY.

M. Albarran (Gaz. Heb. 5 Nov., 1896) has submitted an important report on above topic, and right here it may be well to strongly emphasize the importance of the practitioner in all cases of disease of a single kidney making a critical chemical and microscopical examination of the urine, or having it done by an expert, and further, when he is in doubt some experienced surgeon should be called in to aid him in reaching a definite diagnosis in the case, for it should be remembered that during the past 20 years surgery has opened the way of dealing successfully with a multiplicity of lesions which formerly were left without hope and doomed to a most agonizing and lingering death.

Albarran's report includes 64 operations performed on the kidney, with 59 successes and 5 deaths, about 9 per cent.

There were seven nephrectomies with one death; one partial nephrectomy, with recovery; 24 nephrotomies, with two deaths; five nephrolithotomies, with two deaths; 23 nephrorrhaphies, with no death; four exphratoratories, no death. For floating kidney he insists on stripping the fatty capsule off, but leaving the cortical capsule proper, passing three sutures through the renal parenchyma. His seven cases of hy-

dronephrosis were treated by evacuation and free drainage.

In four cases operated on for pyonephrosis two died. These may usually be diagnosed by pus in the urine, although this may be absent in some cases.

In nephrectomy for tubercular pyonephrosis there was but one death immediately after operation. Of the other seven some survived from three to six months, but only one was alive after two years. There was but one case of cancer of the kidney, in which patient survived exploratory operation. In large kidney from cancer infiltration operation is not advisable.

M. Albarran has noted after many operations on the kidney, as nephropexy, nephotomie and nephrectomy, many very grave reflex symptoms. The most distressing are incoercible vomiting, epigastric and lumbar pain. The patient is deathly pale, has dilated pupils, a weak pulse and a cold skin.

These symptoms usually subside after 24 or 36 hours. In two fatal cases the necropsie shed no light on the cause of death.

LUXATION OF THE CUBITAL NERVE.

M. Drouard (Gazette Heb., 19 Nov., 1896). Congenital luxation of the cubital nerve, according to M. Drouard, is much less frequent than the traumatic variety, but is oftener overlooked. Dislocation from injury may follow, a shock, blow or a fall on the elbow, with more or less laceration of the tissues about the point.

These two types are accompanied by the same general symptoms, much more accentuated in the latter variety. In the traumatic the nerve may have sustained severe damage and take on inflammation.

Orthopedic treatment alone may suffice in some cases, but in the majority the nerve is so displaced or detached from its normal situation that nothing less than a surgical operation will suffice to replace the nerve trunk and so fix it that redisplacement cannot occur and full function may be restored.

FOREIGN BODIES IN THE EAR.

Preobraschensky (Wien. klin. Rundschau, 33-36, 1896) summarizes the whole literature of the extraction of foreign bodies from the ear, and gives a statistical summary of 200 cases. He concludes that: (1) An unskilled person should never attempt the instrumental extraction of a foreign body. (2) Foreign bodies reach the middle ear almost solely as the result of clumsy attempts at extraction. (3) The foreign body usually does less harm to the ear than its extraction by an unpracticed hand. (4) The changes produced by the presence of a foreign body in the ear cannot be estimated by the length of time during which it has remained there. (5) The injection of warm water is an infallible means of securing the evacuation of any foreign body from the ear; irrigation with alcohol may be further necessary to prevent swelling of the intruder. (6) There is no indication to expedite the removal of foreign bodies which are giving rise to no troublesome symptoms. (7) In inflammatory processes caused by necrosis from unskilled attempts at extraction expectant treatment suffices as long as no dangerous symptoms are present. (8) The choice of an operation will depend mainly on the condition and structure of the external auditory meatus. With regard to living objects insects are easily killed by water or oil, and may then be removed by injection. Larva, on the other hand, are only rendered more lively by water, and on injection cling firmly to the walls of the air passages. They may be killed by turpentine, ether, etc., but at the rick of setting up inflammation. A much better method is, according to the author, extraction with pincers.

ENUCLEATION OF THE EYE UNDER COCAINE.

Michael Mohr (Wien. klin. Rundschau, August 30, 1896) records five cases of enucleation of the bulb under cocaine. The drug was used in 5 per cent. solution, and was dropped repeatedly into the conjunctival

sac till the eye was insensitive. The operation was then rapidly performed, and was quite painless. One of the patients was an old man, aged 84, emphysematous, and with a hypertrophied prostate; the heart was much dilated, and there was some cystitis, so that the administration of a general anesthetic would have been a very serious matter. The eye trouble was glaucoma. Another glaucoma case treated with equal success was in a child of 8 months; the glaucoma was here secondary to tuberculous iritis.

FIBROID TUMORS OF THE ABDOMINAL WALL.

Doleris and Mangin (La Gynecologie, June 15, 1896) record two cases occurring in sisters, recurrence was observed in one patient. Doleris removed a fibromyoma as large as an egg from the right groin of a woman aged 37. It had developed a few months after the removal of an ovarian tumor in April, 1890, shortly after recovery from the fourth labor. The fibromyoma was removed on August 3, 1891; it involved the transversalis and obliquus internus and adhered below and posteriorly to the periosteum of the ilium. On March 27, 1895, Doleris removed a tumor identical in nature and situation from the patient's sister. She had been once pregnant, five years earlier. The tumor recurred, and Mangin removed it on February 6, 1896, the second operation proving rather difficult, as the peritoneum, incorporated with the growth, adhered to intestine and omentum. Gombault found that this secondary growth, like the first and like the tumor removed from the patient's sister, was a fibromyoma and not malignant. Mangin remains a little doubtful about its histology. The authors refer to Labbe and Remy's work on the subject, published in 1888. Only 4 per cent. occur in males, and they rarely develop in nullipare. Le Dentu describes a fibroid growth which developed in the scar of an abdominal section seven years old. In four cases, besides Doleris and Mangin's two examples, the growths were reported as true fiibromyomata.

TUMORS OF THE THYROID GLAND.

Dr. Cooke (Brit. Med. Jour.) suggests the seven following rules in removing the thyroid glands:

1. Give chloroform, as ether engorges the already enlarged veins.
2. Observe scrupulous cleanliness, have plenty of assistance and many forceps and ligatures handy.
3. Take plenty of time.
4. After exposure of the cysts use only directors and fingers for dissecting, and keep close to cyst wall.
5. Keep the fingers and the wound moist with an antiseptic solution sufficiently weak not to irritate the sensitive and important nerves sometimes exposed, and as far as possible keep the parts in their normal position.
6. Partially evacuate a large cyst before removal to assist the latter stages of the operation.
7. Insert a small drainage tube before sewing up, for fear a collection of serum should press upon the trachea.

He considers the following as indications for removal:

1. If a tumor be steadily increasing in size.
2. If there be troublesome pressure upon the trachea, esophagus or nerves.
3. If the tumor be so placed as to render impossible a possibly necessary tracheotomy.
4. If the patient strongly urge its removal because of its unsightly appearance, or its interference with the movements of the head.

—University Med. Magazine.

Current Literature in Obstetrics and Gynecology.

E. D. KINNEY, M. D., Boston, Editor.

CONCEPTION AFTER REMOVAL OF BOTH OVARIES AND TUBES.

Stansbury, Sutton and Gordon (Amer. Gyn. and Obstet. Journal, July, 1896) relate two extraordinary cases, for which they do not profess to account. On October 20, 1892, Sutton removed two large multiocular ovarian cysts from a woman aged 28. The ligatures lay close to the uterine cornua. On June 10, 1894, the patient gave birth to a male child weighing 10 1-2 pounds. On February 25, 1896, she was once more delivered. Gordon, in March, 1894, removed both ovaries and tubes from a woman aged 33, the subject of chronic pelvic mischief. He believed at the time that no fragments of the ovary were left. From a few months after the operation she menstruated regularly till June, 1895, when she became pregnant, and was delivered of a healthy child in March, 1896. The only explanation is that the stump of one tube must have opened, allowing an ovum from a piece of ovarian tissue to pass through into the uterus. In a second case, where pregnancy followed three years after operation, it was not absolutely certain that both ovaries were removed. A discussion followed the reading of the above cases at the annual meeting of the American Gynecological Society, but no satisfactory explanation of the occurrence of pregnancy was brought forward.

MYOMA UTERI WITH SPONTANEOUS OBLITERATION OF CERVIX.

Hedren (Upsala Lakareforenings forhandlingar, Band xxx, vol. ii) reports the following case: An unmarried woman, aged 49, had her myomatous corpus uteri removed by abdominal section. She died nine days later of peritonitis, caused by the bursting of an old perityphlitic abscess. The tumor was an ordinary fibromyoma, attached to the upper and anterior part of the uterus by means of a broad pedicle. The uterine cavity was completely occluded and filled with a dark grumous fluid. The cavity was divided into a larger, upper part and a lower, smaller part, covered with mucous membrane—evidently the upper part of the cervix. The remaining cervical part, removed at the necropsy, showed the following peculiarities: The lower part of the cervical canal had a length of five centimetres; it ended blindly. The continuation upward was formed by a thick, fibrous structure 2.4 centimetres in length and 0.3 to 0.5 in breadth. No remnants of a canal could be detected microscopically. The cause of this deformity is probably to be found in the changes of shape effected by subserous myomata on the uterus, especially if adherent to the abdominal wall or organs. By their increasing growth upward they exert a traction on the uterus, and especially on its cervical part, causing its elongation and narrowing, and eventual obliteration of the canal.

WET NURSES AND SUCKLINGS.

Pierre Budin (L'Obstetrique, July 15, 1896) has observed some important cases of the evil effects of sickliness or excitement on the part of the nurse on sucklings. A wet nurse felt weak and ill one day. The three children whom she continued to nurse showed a distinct loss of weight on the next day, gaining once more as she grew stronger. Another nurse had a violent fit of passion.

Both her two sucklings lost weight and had intestinal disturbance; she also suckled her own child, who was seized with diarrhea. Two infants lost weight and were at the same time attacked with erythema of the nates and thighs. They were being suckled by the same nurse. On making inquiries it was found that she was menstruating when they were taken ill. They were transferred to another nurse. Full details of the clinical history of each case are given by the author.

THE TREATMENT OF ECLAMPSIA.

At the recent Congress of Gynecology and Obstetrics at Geneva (Sem. Med., September 16, 1896), Charpentier, claiming to represent the French school, said that when the patient was seized with eclampsia and labor appeared spontaneously all were agreed that the right treatment was to terminate labor as quickly as possible. But when eclampsia set in before labor a distinction must be made between cases at or nearly at term and those earlier in pregnancy. The German school consider the induction of premature labor or even abortion or forced delivery the only treatment. Duhrssen incises the cervix deeply, and if necessary the vulva and perineum; Bossi uses instrumental, others manual dilatation; others again would resort to Caesarean section. Charpentier is convinced that induction of labor is useless and forced delivery dangerous. He concludes that: (1) The urine of every pregnant woman should be examined. (2) If the least trace of albumin is found she must be put on a strict milk diet, which prevents the production of toxins; this must be continued till after labor and till no albumin is present. (3) When edema without albuminuria is found the milk diet is indicated. (4) Whenever eclampsia occurs with cyanosis in a strong woman, bleeding up to half a litre must be performed. (5) Chloral should be given. (6) When convulsions have set in milk should be given by the mouth or, if necessary, by the esophageal tube; this alone sometimes causes cessation of the convulsions. Besides this, the fits should be treated with chloroform inhalations and diuresis induced by subcutaneous injections of normal saline solution. One must then wait till normal labor sets in. If there is inertia uteri labor must be terminated by forceps or version if the child is alive, by basiotripsy if dead. Induced labor is only exceptionally necessary and forced delivery never. Halbertsma, Mangiagalli, Bossi, Pasqualini and others spoke on the other or "German" side, and advocated early emptying of the uterus, very favorable statistics being brought forward in support of this.

ARTIFICIAL DELIVERY AFTER MATERNAL DEATH.

Claverie says that when a woman dies before labor has commenced, immediate delivery by the natural passages is necessary. The cervix should be laid open to facilitate immediate dilatation.. Cesarean section, it is said, has revived aparently dead women when the knife had already been used too freely and too roughly to allow of permanent resuscitation. Some of these gruesome incidents may be fables, muscular twitchings being mistaken for signs of life. In any case, however, no woman has been victimized in this manner when delivered after Duparcque's principle, whilst several have proved to be alive and subsequently recovered. Though delivery through the vagina takes some time, it can be commenced at once in private or hospital practice, so the child is usually got out more quickly than by Cesarean section. It appears from statistics that as many, if not more, children are saved by Duparcque's method. The cutting open of the cervix is of course very essential when the body is that of a primipara. Artificial delivery is always preferable to Cesarean section if it is not quite certain that the mother is dead.

—The Charlotte Med. Journal.

THREE NORMAL PREGNANCIES AFTER NEPHRECTOMY.

To the cases already recorded by Schramm, Fritsch and Israel, E. Tridondani (Ann. di Ostetricia e Ginecologia, July, 1896) adds an interesting instance of the reproductive history of a woman who had had a kidney removed. A patient, aged 29, came into the Maternity at Pavia, suffering from symptoms resembling those of intestinal obstruction accompanied by pain or micturition and scanty urine. She was in the eighth month of pregnancy, and to the left side of the uterus was a fluctuating tumor. Under treatment the symptoms improved, and the woman was spontaneously delivered of a male infant. Three months later the abdomen was opened, and a cystic kidney (the left) was removed; the recovery was complete. Since then the patient has had three pregnancies. In none of the three were there any abnormal symptoms, no edema, urine normal in quantity and quality. The labors were at the full term and non-instrumental. The placenta and membranes in each case were healthy, and the puerperium was normal. The infants were born alive, were healthy and had a weight and size above the average. The author concludes from the study of this and the three other reported cases that pregnancy occurring in a woman with one kidney does not interfere with her health; that the absence of a kidney does not disturb the progress of gestation, labor and the puerperium; and that the product of conception does not suffer. He does not, therefore, agree with Schramm, who advises a woman with a single kidney not to marry, or if married already not to become pregnant. It is noteworthy that in the above case the liquor amnii was increased in amount; but it is doubtful whether this was a consequence of the absence of one of the mother's kidneys.

UTERINE CANCER IN A GIRL AGED 19.

Tchop (Gazette hebdom. medicale de la Russie Meridional, No. 7, 1896) reports that a girl, aged 19, suffered from free hemorrhage after falling downstairs. Syncope occurred, she revived and afterwards was troubled with occasional metrorrhagia, especially during defecation. At the end of four months the pelvis was explored and a tumor having all the characters of a cancer of the cervix was detected. It had not ulcerated. The uterus was removed, and the patient recovered. The growth was a characteristic cylindrical carcinoma of the cervix, and an area of the uterus some distance above the os internum was invaded.

DERMOID CYST OF ROUND LIGAMENT.

Rendu (Annales de Gynec. et d'Obstet., July, 1896) gives the above name to a tumor which he removed. He does not state that the ovary was seen during the operation, nor suggest that the tumor did or did not develop in its substance and burrow, as some ovarian tumors do, between the layers of the broad ligament. The patient was 42, and single, the tumor very large and most prominent on the left side. A bony mass could be felt through the parietes, so that the diagnosis of dermoid tumor was easy. A distinct capsule was found. Rendu describes it as sero-adipose, the fat being doubtless developed from that which is often found in the broad ligament near the ostium of the tube. On tapping 17 pints of a greasy coffee-colored fluid came away. The capsule was easily detached above, but enucleation below proved difficult. A big cavity was left behind, and could not be closed, so a capillary drain was introduced. Recovery was rapid. The tumor contained a large hair ball and a mass of bone of the size of a walnut, resembling in form a molar tooth.

Therapeutical Progress.

NEW AND IMPORTANT THERAPEUTIC PRODUCT SYR. CREOSOTE COMP.

BY EDWARD C. MANN, M. D., NEW YORK.

The medical profession of the Middle States have just been put under many obligations to that excellent chemist, Mr. Wiley, of Neergaard & Co., New York, for giving them a new and valuable pharmaceutical product in an odorless and tasteless Syr. of Creosote Comp. The first claim it has upon our attention is that it has no caustic or irritant effect on the gastric mucous membrane. Second, it is almost tasteless, and third, it does what many new remedies do not do, good clinical work, and lastly, it is, as we have decided the American dollar shall be, what it purports to be. It is the most valuable resuscitating tonic, when combined with the hypophosphites as Neergaard Syrup Creosotum Comp. is that we have in our armamentarum with which to treat cases of tubercular phthisis or scrofulosis. It is well borne by the most delicate stomach and does not offend the most fastidious patient. It enriches the quality and the number of the corpuscular elements of the blood, and night sweats cease, cough lessens and expectoration becomes less, and the patient put on it increases in bodily weight and strength. It is taken clear and does not require to be mixed with milk, wine or water, as other creosote preparations do. We have all felt the need of such a preparation and we hope that Mr. Wiley, who has experimented for a long time to give the profession a non-caustic preparation that would not produce pain, will have the hearty support of the profession to repay him for good clinical work done in the interest of science. We understand that Mr. Wiley is a successful candidate for the degree of Fellow of the Society of Science, Letters and Art, of London.

68 West Thirteenth street.

PAIN AND REST IN DIPHTHERIA.

Rest is one of the sweetest words in our language, and in the management of no disease is this more true than in diphtheria. In keeping with the experience of Professor T. E. Murrell, ex-vice president of the American Medical Asociation, and Dr. Pollack, of St. Louis, who have found antikamnia valuable as a reliever of the pain of nocturnal earache, it has also been found of great value as a sleep producer in these cases. Given in doses of two and a half to five grains every two or four hours there is no depression nor have other than satisfactory results been obtained. Dr. Eggers, of Horton Place, St. Louis, reports in the treatment of an attack of diphtheria in a member of his own family that, to obtund the pain consequent upon the injection of antitoxine serum, which ordinarily lasts from three to four

hours, he exhibited antikamnia internally, securing relief in a few minutes. In the treatment of any neuroses of the larynx, coughs, bronchial affections, la grippe and its sequele, as well as chronic neuroses, clinical reports verify the value of codeine in combination with antikamnia, the therapeutical value of both being enhanced by combination.

CAROID.

Sheffield Scientific School,
of Yale University,
Sept. 25, 1896.

Charles Roome Parmele Co.,

Gentlemen—I send you herewith the results of my study of the digestive power of "Caroid," as contrasted with "Papoid" and commercial papain. In order that you may fully appreciate the data upon which the conclusions are based I send you the quantitative results obtained. The experiments were conducted in series, the digestions of each series being carried out under exactly similar conditions as to temperature, length of time, etc.:

FIRST, PROTEOLYTIC ACTION.

FIRST EXPERIMENT, WITH COOKED BEEF PROTEIDS.

Each digestive mixture contained 0.5 grammes of the ferment preparation, 25 cubic centimetres of fluid, water, acid or alkali, 10 grammes of the moist prepared proteid, and warmed at 40-45 degrees C., with frequent stirring for four hours.

The 10 grammes of moist beef contained 3.8929 grammes of dry proteid, dried at 100-110 degrees C. Following are the results obtained:

CAROID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Water	1.4495	62.7
0.05 Hydrochloric Acid	1.5534	60.0
0.50 Sodium Bicarbonate	1.4045	63.9

PAPOID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Water	2.2030	43.4
0.05 Hydrochloric Acid	2.3234	40.3
0.50 Sodium Bicarbonate	1.9583	49.7

SECOND EXPERIMENT, WITH COOKED BEEF PROTEIDS.

This experiment differs from the preceding, especially in that the amount of ferment preparation employed was much smaller. Each digestive mixture contained 0.2 grammes of the ferment, 25 C. C. of water or other fluid, 10 grammes of moist proteid, and was warmed at 40-45 degrees C. for 3 1-4 hours.

The 10 grammes of moist proteid contained 3.4186 grammes of dry proteid, at 100-110 degrees C.

Following are the results obtained:

CAROID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Water	1.7125	49.9
0.05 Hydrochloric Acid	1.8800	45.0
0.50 Sodium Bicarbonate	1.6086	52.9

PAPOID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Water	2.5052	26.7
0.05 Hydrochloric Acid	2.8328	17.1

THIRD EXPERIMENT, WITH BOILED BLOOD FIBRIN.

This experiment was characterized by the use of a difficultly digestible form of the proteid matter, i. e., blood fibrin, which had been washed with water, soaked for a long time in alcohol and ether and boiled with water. Further, the digestive mixtures contained a larger volume of fluid than in the preceding experiments and a larger percentage of acid and alkali.

Each digestive mixture contained 0.5 grammes of the ferment preparation, 50 C. C. of water or other fluid, 5 grammes of the dried prepared fibrin, and was warmed at 40-45 degrees C. for 6 hours.

Following are the results obtained:

CAROID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Water	2.9582	40.8
0.10 Hydrochloric Acid	4.7801	4.4
1.00 Sodium Bicarbonate	2.8991	42.0

PAPOID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Water	4.0449	19.1
0.10 Hydrochloric Acid	4.7533	4.9
1.00 Sodium Bicarbonate	4.0703	18.6

FOURTH EXPERIMENT, WITH COAGULATED EGG ALBUMIN.

Each digestive mixture contained 0.2 grammes of the ferment preparation, 25 C. C. of fluid, 10 grammes of the albumin coagulum, and was warmed at 40-45 degrees C. for 6 hours.

The 10 grammes of albumin coagulum contained 0.9840 grammes of

dry albumin, dried at 100-110 degrees C.

CAROID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Water 0.4485		54.2
0.05 Hydrochloric Acid 0.8376		14.5
0.50 Sodium Bicarbonate 0.5388		45.0

PAPOID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Water 0.6180		36.9
0.05 Hydrochloric Acid 0.9395		4.1
0.50 Sodium Bicarbonate 0.7010		28.4

The following summary will help bring out more clearly the main points of difference in the digestive action of the several preparations. The figures are the percentages of proteid digested:

IN THE PRESENCE OF WATER.

	1st Exp.	2d Exp.	3d Exp.	4th Exp
Caroid 62.7	49.9	40.8	54.2	
Papoid 43.4	26.7	19.1	36.9	

IN THE PRESENCE OF ACID.

	1st Exp.	2d Exp.	3d Exp.	4th Exp
Caroid 60.0	45.0	4.4	14.5	
Papoid 40.3	17.1	4.9	4.1	

IN THE PRESENCE OF ALKALI.

	1st Exp.	2d Exp.	3d Exp.	4th Exp.
Caroid 63.9	52.9	42.0	45.0	
Papoid 49.7	....	18.6	28.4	

From these results it is plainly evident that caroid is far superior to papoid in its digestive action on proteid foods, in neutral acid and alkaline fluids. Further, by comparison of experiments 1 and 2 it is seen that 0.2 grammes of caroid will digest as much proteid matter in neutral fluid as 0.5 grammes of papoid, from which fact some inference may be drawn as to the relative activity or strength of the two preparations.

FIFTH EXPERIMENT, WITH COAGULATED BLOOD FIBRIN.

In this experiment each digestive mixture contained 2 grammes of dry blood fibrin, 0.2 grammes of the ferment preparation, and 25 C. C. of fluid. The mixtures were warmed at 40-45 degrees C. for 5 1-2 hours:

WITH NEUTRAL FLUID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Caroid 1.0463		47.6
Papain, A.... .....1.1047		44.7
Papain, B.... .....1.1671		41.6

WITH 0.05 PER CENT. HYDROCHLORIC ACID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Caroid 1.4423		27.8
Papain, A.... .....1.5160		24.2
Papain, B.... .....1.5274		23.6

WITH 0.5 PER CENT. SODIUM BICARBONATE.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Caroid 1.0691		46.5
Papain, A.... .....1.2329		38.3
Papain, B.. .....1.2498		37.5

SIXTH EXPERIMENT, WITH COAGULATED EGG ALBUMIN.

In this experiment each digestive mixture contained 10 grammes of the coagulated egg albumin, equal to 1.0057 grammes of dry albumin (dried at 110 degrees C.), 0.2 grammes of the ferment preparation and 25 C. C. of fluid. The mixtures were warmed at 40-45 degrees C. for 5 hours:

WITH NEUTRAL FLUID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Caroid 0.3556		64.6
Papain, A.... .....0.4303		57.2
Papain, B.. .....0.4303		57.2

WITH 0.05 PER CENT. HYDROCHLORIC ACID.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Caroid 0.8024		20.2
Papain, A..... .....0.8959		10.9
Papain, B.. .....0.8735		13.1

WITH 0.5 PER CENT. SODIUM BICARBONATE.

	Undigested residue. Grammes.	Proteid digested. Per cent.
Caroid 0.4596		54.3
Papain, A.... .....0.5691		43.4
Papain, B.. .....0.5927		41.0

If we examine these results critically it is plain that the digestive power of caroid on proteid matter is greater than that of the other two preparations. The difference in digestive strength is more apparent in these experiments with coagulated egg albumin than with the other form of proteid matter, although quite marked with blood fibrin.

SECOND, STARCH DIGESTING POWER.

In starch digesting power caroid is far superior to the other preparations, papoid and papain. The following experiments will throw some light upon this point.

A starch paste made from 5 grammes of dry arrow root starch, with 500 C. C. of water. Mixtures were then prepared as follows:

Gramme.		Water.		Starch paste.
1. 0.5 Caroid	-|-	90 c. c.	-|-	10 c. c.
2. 0.5 Papoid	-|-	90 c. c.	-|-	10 c. c.
3. 0.5 Papain,A	-|-	90 c. c.	-|-	10 c. c.
4. 0.5 Papain,B	-|-	90 c. c.	-|-	10 c. c.

These four mixtures were placed

at 40 degrees C. and tested from time to time with iodine solution. In five minutes No. 1 had reached the achromic point, while No. 2 did not give the achromic reaction until the end of two hours. At the end of three hours Nos. 3 and 4 still gave a bluish violet reaction with iodine.

In another series of experiments, exactly similar to the above, except that each mixture contained only 0.2 grammes of ferment, the caroid brought about a complete conversion of the starch into bodies non-colorable by iodine in 18 minutes, while the others gave a blue reaction after two or three hours.

The presence of alkalies retards the diastatic or amylolytic action, but the caroid shows throughout very much greater amylolytic power than the other preparations.

Respectfully yours,
R. H. Chittenden, Professor of Physiological Chemistry.

WHERE IS THE FOOL KILLER?

The Lancet-Clinic tells of a young man who was left a large sum of money to buy all the medical books published in the English language for ten years. A professional buyer was to buy them, and the young doctor attempted to read them. At the end of the first year he was back 50 books, with severe mental indigestion. At the close of the second year he gave it up in dispair, and from that time on he only read the titles and put the volumes away. Books accumulated in all parts, and an assistant attempted to arrange and classify them. At the end of ten years the first five years' volumes were scarcely worth more than their cost in old paper. The most of the last five years' volumes were reproductions of the first year's, with some additions and many changes. Finally he became involved and offered to dispose of these books, and the highest offer made for them was $600. The actual cost had been $16,000.

—Medical and Surgical Reporter.

A QUESTION OF QUALITY.

A clergyman, with a view to introduce more hymn books into the church, left with the clerk a notice to give out after the sermon. The clerk had also a notice to give out with reference to the baptism of infants, and at the close of the sermon he arose and announced: "All those who have children whom they wish to have baptized please send their names at once to the clerk." The clergyman, who was stone deaf, assumed that the clerk was giving out the hymn book notice, and immediately arose and said: "And I should say for the benefit of those who have not any that they may be obtained at the vestry any day from 3 to 4 o'clock; the ordinary little ones at 1 shilling each, and special ones with red backs at 1 shilling and 4 pence."

—Med. Brief.

RECTAL ALIMENTATION.

The following prescriptions are given by the Journal des Praticiens:

As a nutritive enema:

R—Cod-liver oil.....5 oz.
Yolk of one egg.
Lime water.....10 oz.

This mixture is sufficient for four or five enemata, which may be given during the course of a day. In other instances the following may be employed:

R—Cod-liver oil.....5 oz.
Yolk of one egg.
Chloride of sodium.....40 gr.
Water .....10 oz.

This is also sufficient for four or five separate enemata.

In still other cases, where it is desirable to use the hypophosphites and the stomach will not retain them, the following rectal injection may be employed:

R—Cod-liver oil.....1 pt.
Gum tragacanth.....35 gr.
Gum arabic.....1½ oz.
Hypophosphite of lime.....35 gr.
Lime water, a sufficient quantity to make 1 qt.

From four to six ounces of this liquid may be used as an injection.

For dysentery:

R—Sulphate of quinine.....10 gr.
Powdered ipecac root.....5 gr.
Chloride of ammonium.....10 gr.
Tincture of opium.....12 m
Distilled water.....1 oz.

Of this a small teaspoonful may be taken every four hours.

—Amer. Druggist.